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American Journal of Public Health

And *The Nation's Health*

Volume XX February 1930 Number 2

Influenza

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American Journal of Public Health
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Volume XX February, 1930 Number 2

The Influenza Epidemic of 1928-1929 with Comparative Data for 1918-1919*

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THE influenza epidemic of the winter of 1928–1929 was by no means the first outbreak since 1918. To get some idea of what has been happening to the influenza-pneumonia death rate during the past decade, weekly data for a group of about 95 cities † have been studied. These cities with an aggregate population of over 30,000,000 are distributed throughout the United States. In order to get a workable population group in such sections as the Mountain States, some cities as small as 12,000 are included. The aggregate population of the 68 cities that had a population of 100,000 or more in 1920 is about the same as the aggregate population of these 95 cities, but the latter group is considerably more representative of the different sections of the country.

In the upper half of Figure I the weekly death rates from influenza and pneumonia combined have been plotted. The dotted line represents the weekly median or expected rate.‡ In the lower half the excess over the median rates have been plotted as an approximation of the extent of the influenza-pneumonia deaths due to the epidemics.

It will be seen that since January 1, 1920, there have occurred six

* Summary of a paper presented before the Epidemiology Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

† Death rates from influenza and from pneumonia for this group of cities have been published weekly in the *Public Health Reports* since January 1, 1925. Published and unpublished reports of deaths in these cities enabled us to carry the record for a large proportion of the cities back to January 1, 1920. Although some of the cities are not included in the earlier years, the group is for the most part identical for the different years.

‡ It may be seen from Figure I that if the epidemic peaks are left out of consideration there is little if any trend either up or down in the actual influenza-pneumonia death rates. The median influenza-pneumonia weekly death rate was, therefore, taken as the "normal," the medians being based on the 7-year period 1921–1927 inclusive. As there was some chance variation in this median rate, the 52 medians, representing the 52 weeks of the calendar year, were smoothed by a 5-period moving average.

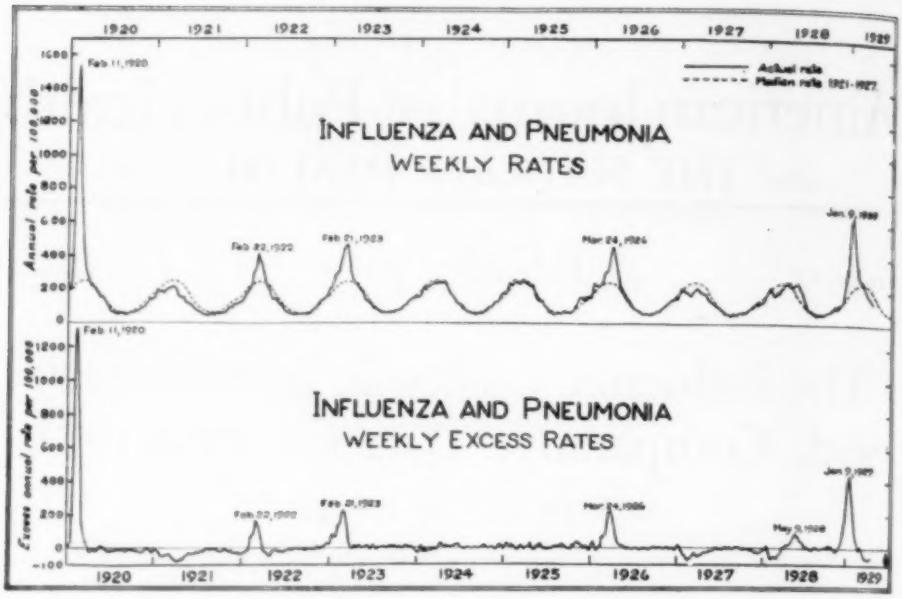

FIGURE I—Weekly total and excess influenza-pneumonia mortality in a group of about 95 cities in the United States, 1920–1929. Dates on graph are middle (Wednesday) of the peak weeks. (Excess over median rates for corresponding weeks for the period 1921–1927. The 52 medians representing "normal" or "expected" rates for the different weeks of the year were smoothed by a 5-period moving average before the excesses were computed.)

more or less definite epidemics. The epidemic of 1928–1929 was the most important since that of 1920. The peaks of these six epidemics occur all the way from the early part of January to the early part of May, and the peak of the pandemic of 1918–1919 occurred much earlier in the fall than was the case in 1928–1929.

The severity of each of the epidemics may be judged to a considerable extent by the weekly excess rates (as given in Figure I), but a more accurate measure would be the total excess rate during the whole period of the epidemic. Table I shows this total excess rate for each of the six epidemics that have occurred since January 1, 1920. Unlike the weekly rates, those in Table I are not on an annual basis.

It will be noted that as measured in total mortality from influenza and pneumonia, the epidemic of 1928–1929 was almost half of that of 1920. If the excess rates as found in these 95 cities are at all representative of the country as a whole, something like 50,000 influenza-pneumonia deaths in the United States occurred during the epidemic of the winter of 1928–1929 in excess of the normal expected number from those causes. The figure for 1920, in agreement with previous estimates, is about 100,000 excess influenza-pneumonia deaths. Dur-

ing the 1918–1919 pandemic, it has been estimated that about 500,000 influenza-pneumonia deaths occurred in this country in excess of the normal expected number, so that the recent epidemic of 1928–1929 caused only about one-tenth as many deaths as the great pandemic. It will be recalled that during the winter of 1918–1919 the influenza-pneumonia death rate remained high for a long period after the peak of the epidemic; in fact, during a period of eight or nine months the death rate was very much above normal.

Table I also shows for each of the geographical sections the total excess rates* during each of the epidemics since 1920. In the 1928–

TABLE I

TOTAL EXCESS* INFLUENZA-PNEUMONIA DEATH RATE PER 100,000 DURING THE WHOLE OF EACH EPIDEMIC IN CITIES OF THE DIFFERENT GEOGRAPHIC SECTIONS OF THE UNITED STATES, 1920–1929

Geographic section	Epidemic of:					
	1920	1922	1923	1926	Spring of 1928	Winter of 1928–1929
All cities	99.3	18.3	29.9	25.3	11.6	44.4
New England	96.6	29.5	36.6	30.0	15.4	42.3
Middle Atlantic	95.2	24.7	26.5	41.2	20.9	43.0
South Atlantic	94.2	9.4	42.7	26.2	none	47.6
East North Central	109.4	11.4	32.2	22.2	17.9	43.7
East South Central	99.1	16.0	44.0	38.2	11.9	92.0
West North Central	121.9	34.8	53.3	none	4.9	42.8
West South Central	91.2	14.6	6.7	58.8	13.7	68.2
Mountain	159.5	36.2	17.6	16.8	7.7	68.7
Pacific	57.7	36.3	11.3	9.3	none	43.0

* Excess over the median rates for corresponding weeks for the period 1921–1927. The series of 52 medians representing "normal" or "expected" rates for the different weeks of the year were smoothed by a 5-period moving average before the excesses were computed. It should be noted that the rates in this table, unlike the rates shown in Figure I, are not on an annual basis.

Because the rates in non-epidemic weeks of 1922 are nearly all lower than the median rate 1921–1927, a correction was made for that epidemic by measuring the excess not over the zero base line representing the median rate (Figure I) but over a line parallel to the base line but 25 points (in the rate per 100,000) below it. The amount of this correction varied in the different geographic areas.

1929 epidemic the excess rates in six of the nine sections were practically the same, varying only from 42 to 48 per 100,000. In three sections, the East South Central, West South Central and Mountain, the rates were considerably higher than in the other six sections, the East South Central cities having a particularly high rate.

It will be recalled that, so far as the country as a whole was concerned, the 1922 epidemic was rather small, the epidemics of 1923 and

* Median or expected rates and excesses above those rates were computed for each section in the manner already outlined in connection with the cities considered as a whole.

1926 both being somewhat larger. It will be noted that on the Pacific Coast the 1922 epidemic was rather large, the total excess rate being about four-fifths of the corresponding rate in the 1928–1929 epidemic. The epidemics of 1923 and 1926 were very small in the Pacific coast cities. In the East South Central section the total excess death rate in the 1928–1929 epidemic was nearly as large as that of the 1920 epidemic.

Each of the six epidemics that have been noted as occurring since January 1, 1920, appeared to some extent in nearly all of the nine sections. However, a few sections showed a considerable excess during years that, so far as the country as a whole was concerned, were considered relatively free from influenza. For example, in 1925 the West South Central section showed excess death rates as great as occurred in many sections during the years 1922, 1923 and 1926.

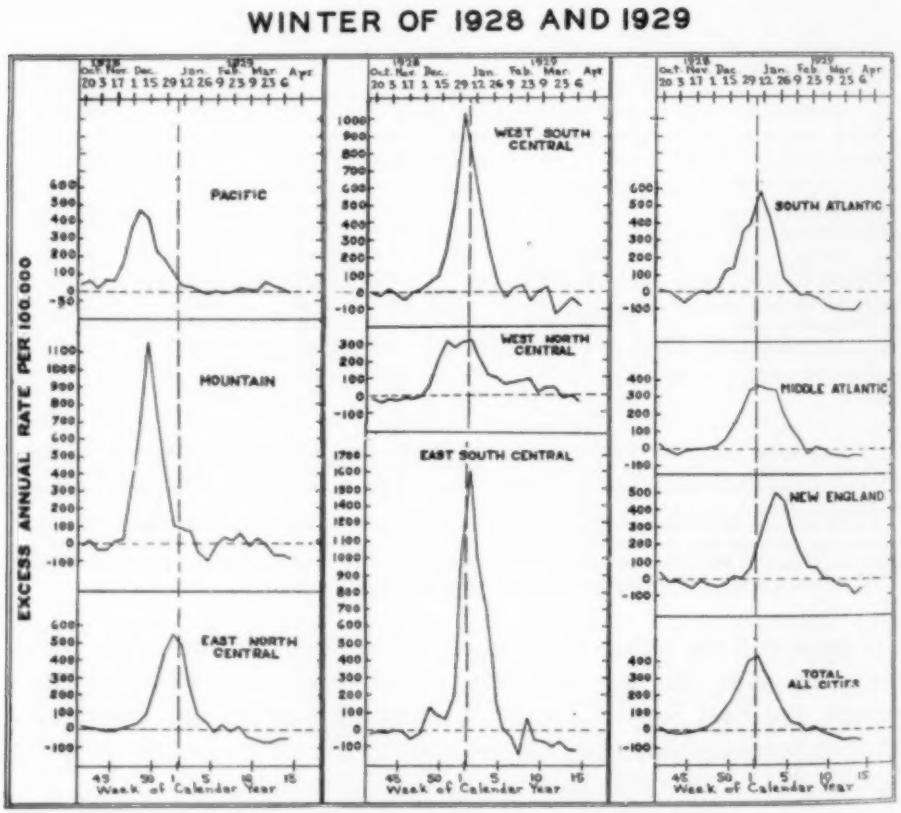

FIGURE II—Weekly excess influenza-pneumonia mortality in a group of cities in each geographic section of the United States during the epidemic of the winter of 1928–1929. Sections arranged in order of dates of peak mortality as shown in Figure III. (Excess over median rates in the same geographic section for corresponding weeks for the period 1921–1927.)

In Figure II the weekly excess rates for each geographic section are plotted for the short period in the winter of 1928–1929, during which influenza was epidemic. The broken vertical line represents the peak date of the epidemic when the total 95 cities are considered as a group, the excess rates for the whole group being plotted in the lower right hand section of the figure. The peak of the excess mortality occurred on the Pacific Coast early in December. The different sections following the Pacific Coast are arranged in the order of the occurrence of the peaks. Reading the sections down the graph it may be seen that the epidemic followed a very regular course from west to east, ending in New England with a peak about seven weeks later than that on the Pacific Coast.

In contrast to the 1928--1929 epidemic, the 1920 epidemic spread over the country in a very much shorter time. This epidemic apparently started in the East North Central States, around Chicago, from which it traveled east, west and south, ending in the East South Central States with a peak date only about two or three weeks after that in the first section. Figure III shows on a map the starting place and spread of the epidemics of 1920 and of 1928–1929.

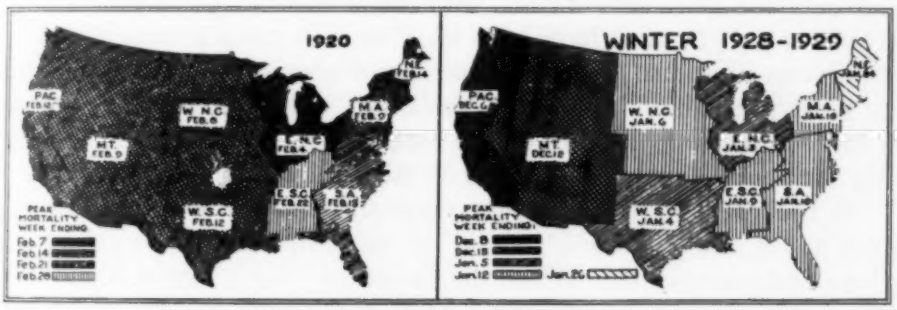

FIGURE III—Time of occurrence of two influenza epidemics in cities of different geographic sections of the United States. Darkest sections were first, and lightest sections were last to be affected. (Dates represent estimated peak days for the section, the estimate being made by interpolation within the peak week when account is taken of the rates for the two adjacent weeks.)

The 1926 epidemic, like the recent one of 1928–1929, apparently started on the Pacific Coast. The 1923 epidemic started in the East South Central section and spread rather slowly to other sections of the country. The spread of the epidemics of 1922 and of the spring of 1928 was rather indefinite but the former appears to have started in the East, probably in the Middle Atlantic section, and the latter in the West, probably in the Mountain section. There is, then, no one section where epidemics usually start; in the six epidemics the start has occurred in five different sections.

INFLUENZA MORBIDITY* AS INDICATED BY SPECIAL SURVEYS, 1928–1929 AND 1918–1919

Immediately after the 1928–1929 epidemic the U. S. Public Health Service made surveys in 10 cities in the United States similar to surveys made in about an equal number of cities in 1918–1919. In cooperation with state health departments, some small towns and rural communities were surveyed in Missouri, New York, and Massachusetts. The selected localities of the two epidemics were not identical, but the incidence rates probably give a fairly accurate idea of the number of cases in the two epidemics.

House to house canvasses were made of selected districts with a total population of 10,000 to 15,000 persons in each of the cities to be surveyed.† The two surveys were made along generally comparable lines, but there were some differences in the methods used. In the 1918–1919 survey, the enumerators were instructed to class as influenza such reported "colds" as lasted three days and kept the patient in bed one whole day, unless the case had been otherwise diagnosed by a physician. Other colds were to be recorded as "doubtful," but the number of such doubtful cases reported was so small that it appears that only the more severe colds were remembered by the informants. Attention in 1918 must have been fixed on such cases as were reported as influenza, because of the unusual importance of the disease during the great pandemic. Moreover, the term "doubtful" would suggest to the enumerator, in spite of the instructions to the contrary, that only such colds should be included as might have been influenza.

In the 1928–1929 survey, the enumerators were instructed to inquire about and to record "colds" as such, in addition to influenza, grippe and pneumonia. While the record of "colds" must be incomplete because minor cases were forgotten, it seems reasonable to believe that it contains a larger proportion of the colds that actually occurred than was true of the "doubtful" category of the 1918–1919 surveys. We have accordingly classified the colds reported in the 1928–1929 survey into those causing one or more days in bed and those in which the patient was not confined to bed. For purposes of comparison with the 1918 surveys these colds in bed have generally been included with influenza, pneumonia and grippe as more nearly approximating the influenza, pneumonia and doubtful category of the 1918 data.

Of the cases definitely classified as influenza or grippe, the 1928–

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* The data in this section are preliminary and subject to minor changes in later reports.

† For a more detailed statement of the methods, see Veldee, M. V., Morbidity in the Influenza Epidemic of 1928–1929—Preliminary Report on Surveys in Various Cities, *Pub. Health Rep.*, 44, 19 (May 10), 1929. (*Reprint 1282.*)

1929 rate of 145 per 1,000 persons canvassed is somewhat more than one-half of the rate of 242 per 1,000 in the 1918–1919 epidemic. In the 1918–1919 epidemic the incidence of pneumonia was 16.4 per 1,000, or more than three times the rate of 4.7 cases per 1,000 in 1928–1929. The incidence rate for the group of cases classified as "doubtful," 21.5 per 1,000, in the 1918–1919 surveys was only about half the rate of 39.6 per 1,000 for colds with one or more days in bed in the 1928–1929 epidemic. In addition, there was reported in 1928–1929 a large number of colds (76.6 per 1,000) that involved no days in bed. Considering all the respiratory conditions together, the rate in 1928–1929 was not far different from what it was in 1918–1919, but, as already noted, the 1928–1929 data appear to include a considerably larger proportion of the cases of common colds, such as occur during every winter, than is true of the 1918–1919 data.

Table II shows the case rate for each of the localities surveyed in 1928–1929 and in 1918–1919. Although the localities were not the same in the two surveys (only three surveyed in 1918–1919 were surveyed in 1928–1929), the general picture is perhaps comparable. In this table colds involving one or more days in bed have been included with influenza, grippe and pneumonia because, as already stated, that combination appears to be more nearly comparable to the 1918 data which include influenza, grippe, pneumonia and "doubtful." Another disturbing element is the fact that the period for which respiratory

TABLE II

INCIDENCE OF INFLUENZA AND GRIPPE * IN EACH OF A GROUP OF LOCALITIES SURVEYED IN 1928–1929 AND IN EACH OF A GROUP OF LOCALITIES SURVEYED IN 1918–1919

1928–1929	Case rate per 1,000 persons canvassed	1918–1919	Case rate per 1,000 persons canvassed
All localities	189	All localities	280
Des Moines, Ia.	304	San Antonio, Tex.	535
Minor Towns	252	Minor Md. Towns	405
Seattle, Wash.	222	Little Rock, Ark.	359
Kansas City, Mo.	188	Augusta, Ga.	341
Pittsburgh, Pa.	181	Baltimore, Md.	246
New Orleans, La.	181	Des Moines, Ia.	231
Syracuse, N. Y.	177	San Francisco, Calif.	215
San Francisco, Calif.	161	Spartanburg, S. C.	214
Cincinnati, O.	159	Macon, Ga.	213
Boston, Mass.	154	New London, Conn.	185
Baltimore, Md.	138	Louisville, Ky.	150

* 1928–1929 cases include influenza, grippe, pneumonia and colds with one or more days in bed; 1918–1919 cases include influenza, grippe, pneumonia and "doubtful."

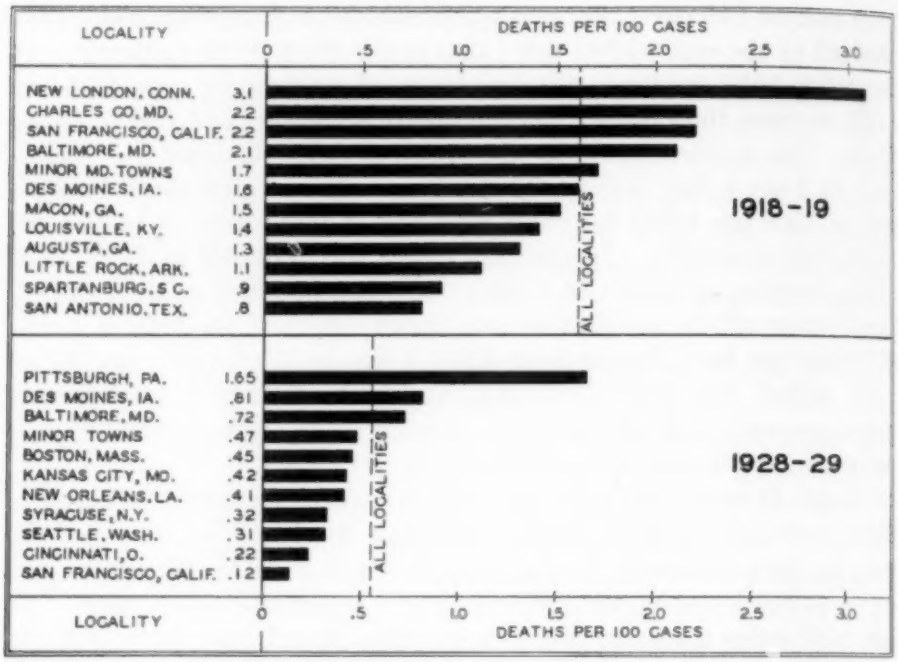

FIGURE IV—Case fatality of influenza and grippe in each of a group of localities surveyed in 1928–1929 and in each of a group of localities surveyed in 1918–1919. (Cases in 1928–1929 include influenza, grippe, pneumonia and colds with one or more days in bed; 1918–1919 cases include influenza, grippe, pneumonia and "doubtful.")

attacks were recorded varied in the different localities. In spite of these possibilities of error, it is believed that the data in Table II give a fair picture of the extent and variation of the influenza morbidity rates in a few fairly representative localities in the two epidemics.

The case fatality is hard to determine because it is difficult to estimate how many cases of influenza occurred. Considering all surveyed localities together, the case fatality in the 1928–1929 epidemic was 0.70 per cent if the deaths are related to only the cases definitely reported as influenza, grippe or pneumonia. If the colds that involved one or more days in bed be added to these cases as possible influenza, then the fatality becomes 0.56 per cent. If all colds as well as influenza and grippe be considered as a unit, the fatality is 0.40 per cent. Considering these three statements, it may be said that the case fatality in 1928–1929 was somewhere between one-fourth and one-half of that shown by the surveys of 1918–1919 (1.6 per cent).

Figure IV shows the case fatality for each of the surveyed localities in 1928–1929 and for each of those surveyed in 1918–1919. It may be seen that only one locality, Pittsburgh, reached as high a fatality in 1928–1929 as the average for all surveyed localities in 1918–1919.

As regards the proportion of cases complicated by pneumonia, the percentage also varies according to what type of respiratory attacks are considered as influenza or at least doubtful influenza. In the 1918–1919 epidemic about 6 per cent of the cases were complicated by pneumonia, against from 2 to 3 per cent in that of 1928–1929.

In the 1918–1919 epidemic, the deaths constituted 25 per cent of the cases of pneumonia and in 1928–1929, 21 per cent. It appears, therefore, that the great difference in the fatality of influenza and grippe is due to the difference in the percentage of cases complicated by pneumonia.

TABLE III

PERCENTAGE OF INFLUENZA AND GRIPPE * CASES THAT WERE COMPLICATED BY PNEUMONIA IN EACH OF A GROUP OF LOCALITIES SURVEYED IN 1928–1929 AND IN EACH OF A GROUP OF LOCALITIES SURVEYED IN 1918–1919

1928–1929	Per cent of cases complicated by pneumonia	1918–1919	Per cent of cases complicated by pneumonia
All localities	2.6	All localities	6.3
Pittsburgh, Pa.	4.5	Des Moines, Ia.	10.2
Boston, Mass.	3.5	New London, Conn.	9.3
Baltimore, Md.	3.5	San Francisco, Calif.	8.0
Kansas City, Mo.	3.3	Baltimore, Md.	7.3
Syracuse, N. Y.	2.4	Minor Md. Towns	6.4
Minor Towns	2.4	Louisville, Ky.	6.2
Cincinnati, O.	2.4	Macon, Ga.	6.1
Des Moines, Ia.	2.2	Augusta, Ga.	4.5
New Orleans, La.	2.0	San Antonio, Tex.	4.5
Seattle, Wash.	1.6	Little Rock, Ark.	4.5
San Francisco, Calif.	1.5	Spartanburg, S. C.	3.1

* 1928–1929 cases include influenza, grippe, pneumonia and colds with one or more days in bed; 1918–1919 cases include influenza, grippe, pneumonia and "doubtful."

Table III shows the percentage of cases that were complicated by pneumonia. In 1918–1919 nearly 10 per cent of the cases reported in Des Moines were complicated by pneumonia and the average for all of the surveyed localities was nearly 6 per cent. In 1928–1929 the highest percentage of cases complicated by pneumonia was 4.5 for Pittsburgh—a figure considerably below the average of the surveyed localities in 1918–1919.

Figure V shows the age incidence of influenza and grippe in all localities surveyed in 1918–1919 and in 1928–1929. The very high incidence under 30 years of age and the rather rapid decline in the incidence as age increased, which were characteristic of the 1918–1919 epidemic, are not found in the 1928–1929 data. There is, however, one point of similarity—a rather high incidence under 10 years

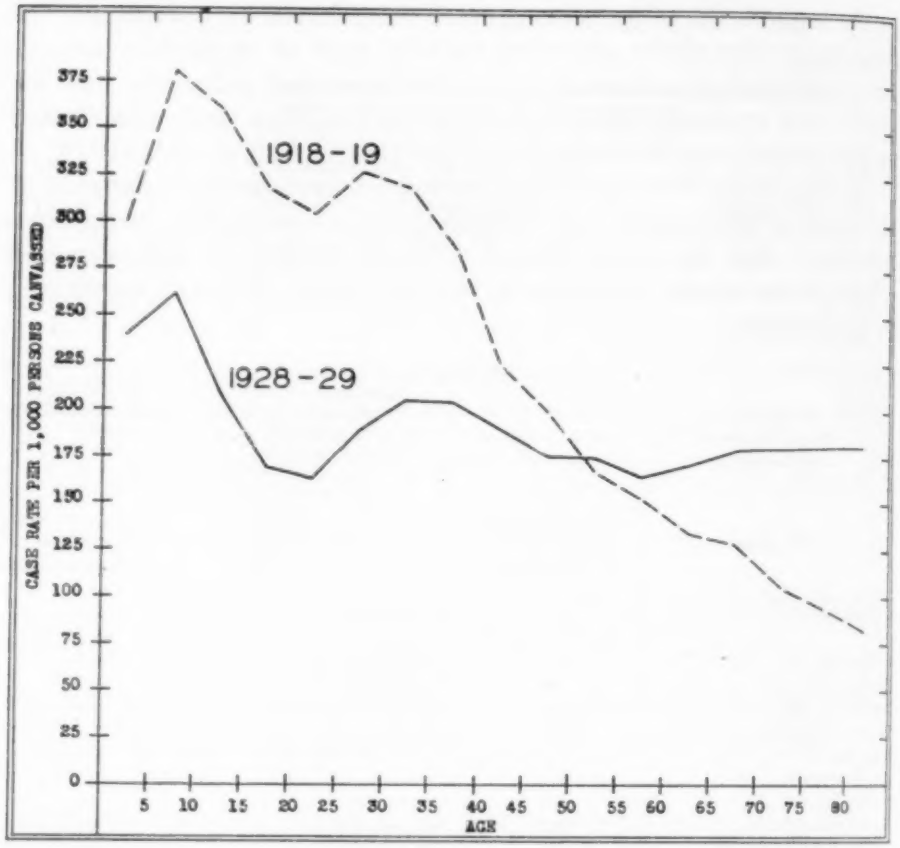

FIGURE V—Age incidence of influenza and grippe in a group of localities surveyed in 1928–1929 and in a group of localities surveyed in 1918–1919. (Cases in 1928–1929 include influenza, grippe, pneumonia and colds with one or more days in bed; 1918–1919 cases include influenza, grippe, pneumonia and "doubtful.")

of age followed by a considerable drop to a minimum from 15 to 25 years with a rise and a second peak around 30 to 40 years of age. This type of curve seems to run quite consistently through all the localities in 1928–1929. Although not reproduced here, that in general was the description of the age curve of influenza that occurred in Baltimore, Md., during the epidemic of 1920 and in Hagerstown, Md., during the epidemics of 1922 and 1923.[1] It might be stated that the age curves of influenza and of grippe in the 1928–1929 data are very similar, both showing peaks at 5 to 9 and again at 30 to 40 years of age. The age curves for all colds and for colds with one or more days in bed, however, are quite different from the curve for influenza and grippe.

SUMMARY

Influenza-pneumonia mortality data for 95 cities representing all sections of the United States indicate that since January 1, 1920, six

definite epidemics have occurred. If the excess rates in these cities are at all representative of the country as a whole, about 50,000 influenza-pneumonia deaths occurred in the United States during the epidemic of the winter of 1928–1929 in excess of the normal number from those cases. During the six epidemics between 1920 and 1929, somethink like 250,000 excess influenza-pneumonia deaths occurred in this country—equal to about half of the 500,000 excess influenza-pneumonia deaths in the United States during the pandemic of 1918–1919.

The case incidence of influenza and grippe in the 1928–1929 epidemic as determined by the special surveys, seemed to be more than half of that of 1918–1919. The percentage of cases complicated by pneumonia and the case fatality, however, were much less in the recent epidemic, being in 1928–1929 somewhere between one-fourth and one-half of the corresponding figures for 1918–1919.

REFERENCE

1. Sydenstricker, Edgar. The Incidence of Various Diseases According to Age, Hagerstown Morbidity Studies No. VIII, *Reprint 1227, Pub. Health Rep.*, 43, 19 (May 11), 1928.

EXPLANATION: In this paper the terms "influenza" and "influenza-pneumonia" designate the classifications in the recorded mortality that were used and are not intended to suggest that the various respiratory epidemics were necessarily etiologically the same.

NOTE: In the preparation of this paper I have had the advice and assistance of W. H. Frost, M.D., Consultant, and Statistician Edgar Sydenstricker, who, with the author, constitute a board for the study of respiratory diseases appointed by the Surgeon General of the U. S. Public Health Service. Some of the charts here presented will be included in a more detailed article including tabular material which will be published by the Service.

"Bargain" Eyeglasses Ruin the Eyes

THE National Society for the Prevention of Blindness and the National Better Business Bureau have recently called attention to the fact that certain mail order houses are selling spectacles by mail and that thousands of persons are endangering their eyesight by the use of such glasses which strain instead of aid the vision.

This warning is fully justified, but the organizations in question might well have called attention at the same time to the equally bad practice by department and five and ten cent stores of selling eyeglasses which are fitted (?) by inexperienced salespersons. This practice is a violation of the Education Law in New York State, the legality of which was recently upheld by the Supreme Court of the United States.—*Health News*, Nov. 25, 1929.

What We Know of Influenza and How We May Add to Our Knowledge*

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ON previous occasions I have taken so much time and space in setting forth the scanty nature of our knowledge of influenza that any further detailed discussion of our ignorance seems unnecessary. A few topics, however, appear worthy of brief consideration.

1. The rapidity with which epidemic influenza travels and the large number of persons attacked within a short period gave rise to early conjecture that the disease was borne by the wind or, at least, that it was dependent on general atmospheric or even cosmic conditions which affected nearly simultaneously large masses of people. One writer asserted that "the depraved Constitutions of the Atmosphere are the Causes of almost all epidemic Distempers" (Huxham). Another called influenza "a blast from the stars." These beliefs have died hard and there are still today some observers who maintain that the occurrence of widespread and mysterious fluctuations in susceptibility furnish an adequate explanation for the rise of pandemics. Modern students of influenza are, however, a unit in regarding influenza as a typical infectious disease due to a living, if yet unknown, microörganism. Whatever the origin of pandemics, whatever the possible predisposing effect of obscure cosmic factors, there need be no hesitation in accepting the fact that influenza is a germ disease spread largely, if not wholly, by human agency.

2. The mode of transmission of influenza is necessarily inferential. There is no evidence that water or milk ever serves as a vehicle of infection or that the virus resists drying for considerable periods and is transmitted in dust. The various diseases of domestic animals denominated influenza seem to have no relation to the human infection. The hypothesis of an insect vector appears quite fantastic. The facts that are known about the manner of spread of influenza epidemics accord best with the hypothesis that the disease passes directly from one human being to another, probably by drop-

* Read before the Epidemiology Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

let infection. While no precise information exists as to the relative importance of active cases, convalescent cases, or healthy carriers, in spreading infection, there is reason to believe that persons suffering from the disease in its early stages are particularly likely to convey the infection to others.

3. Since the pandemic of 1918–1919 the laboratory study of the infection seems to have languished, and few bacteriological studies of importance have appeared. This would seem to be due not to any lack of material—for several extensive epidemics have occurred—but to the almost overwhelming technical difficulties involved. The remarkable quality that the influenza virus has of facilitating invasion of the body by many kinds of other microbes, the apparent insusceptibility of the ordinary domestic and laboratory animals to influenza infection, and the difficulties of securing non-immune human volunteers and inoculating them with a freshly isolated virus during an epidemic period, are some of the factors that make the bacteriological investigation of influenza peculiarly arduous and complicated. The most recent extensive study of which I am aware is that carried out by Falk and his associates in the University of Chicago. Their results, obtained by monkey inoculations on a large scale, are in a high degree suggestive of the isolation of a definite microbe. Their conclusions must necessarily run the gauntlet of confirmation by other workers.

4. Much of the early uncertainty about the identity of interpandemic influenza has now disappeared. The careful clinical and epidemiological studies made since 1919 have left little doubt in the minds of most observers that such outbreaks as those of 1920, 1926 and 1928–1929 in this country, and those of 1922, 1927 and 1928–1929 in Great Britain, are definitely comparable with the great pandemics. While we must wait on substantial bacteriological knowledge for a final conclusion, we seem at the moment amply justified in the assumption that at least under modern conditions of transportation there is no break in the continuity of influenza infection in large population aggregates.

Since 1919 there have been many local flare-ups in Europe and North America, and a considerable number of fairly widespread outbreaks in addition to the notable epidemics already specified. This may be taken as support for the view that the virus of influenza is widely disseminated throughout the civilized world; that from time to time special varieties of this virus arise by unknown biological processes; and that some of these varieties become the prime factor in the genesis of epidemics of greater or less magnitude. It may

even be true that these new types of influenza virus are merely immunologic races similar to those known to occur in several familiar microbic groups, and that the advent of one of these new races in a population already fairly immunized to its own indigenous strains finds such a mass of specifically susceptible individuals that rapid epidemic spread is possible. Whether this is the explanation or not, it seems to be the case that at least in recent years influenza has not died out completely on the great continents in the periods between the pandemics. The relatively incomplete data available for 1890 to 1918 appeared to indicate this quite strongly; the observations made since 1918 bear witness that for every calendar year since the greatest of pandemics it is possible to obtain a record of the excessive prevalence of influenza somewhere in the world.

5. In the field of prevention little real progress has been made. It seems justifiable to increase the emphasis already placed on the influenza patient as a definite focus of infection and to adopt reasonable measures to reduce crowding and direct contact to a minimum during a period of epidemic prevalence. A stricter isolation of influenza patients will probably some day be put into effect. During the 1928 epidemic at the University of Oregon,[1] stress was laid upon the early isolation of all sick persons, with the result that the morbidity was less than 15 per cent, whereas 9 of the 15 nurses employed (60 per cent) contracted influenza. The opportunities for self protection by individuals lie along the same line: avoidance of crowds and of direct contact with influenza patients and with all persons suffering from "colds"; rigorous abstention from the use of common drinking glasses, common towels and the like; and scrupulous hand washing before eating. While measures of personal hygiene designed to promote physical vigor and well-being are assuredly not to be decried, it is not clear that such measures are efficacious in preventing influenza infection during an epidemic period.

In the lack of any demonstrated causal agent of influenza it is plain that no valid specific vaccine is available. The so-called influenza vaccines and serums prepared with a gay assortment of organisms of conjectural importance could hardly be expected to be very effective. In point of fact their use, whenever accompanied by adequate controls, has signally failed to show any beneficial result. In a recent report by Sir George Newman, Chief Medical Officer of the British Ministry of Health, the records of influenza incidence among the inoculated and uninoculated pupils at a large public school from 1920 to 1929 manifest in a striking way the absence of any cogent evidence of protection. Since the immunity conferred by a natural

attack of influenza is apparently slight and transient, we are perhaps not warranted in entertaining very high hopes of success from artificial immunization.

Among the almost innumerable problems concerning influenza that present themselves to the investigator, only a few of the more crucial can be mentioned here.

1. Interest has always been keen in the relation of influenza to the common cold. Observers have reported that during an influenza epidemic many "colds" are of the "influenzal" type, and in some instances definitely traceable to cases of "true" influenza. In a non-influenzal period even, many observers have been struck by the similarity to influenza both of individual cases of "cold" and of small epidemics. There is obviously chance for confusion here, but if it is true, as it seems to be, that influenza never quite disappears from our great communities, it may be fairly supposed that certain more or less definite clinical and epidemiological types deserve to be included in the influenza concept.

One of the most important questions to be settled is: When is a cold a cold, and when is it influenza? The recent studies of van Loghem[2] in Holland are thought by him to indicate an epidemiological differentiation between the illnesses in that country reported by volunteer lay observers as colds and those reported as influenza. Whereas the increase and decrease of colds in the Netherlands from September, 1925, to June, 1926, ran parallel to the fall and rise of air temperature and, in his opinion, gave no evidence of contagiousness, the reported cases of influenza followed a generally independent course and attained their maximum in March–April. Both pneumonia mortality and influenza mortality concurred with the influenza cases of the inquiry. This is interpreted by van Loghem as indicating a rather sharp demarcation between colds—which he classes as non-contagious commensal infections founded on a disturbance of thermo-regulation—and influenza—which he regards as a true parasitic infection, taking its own epidemic course. van Loghem's data, however evaluated, should be greatly extended to elicit the true relation between colds, influenza and pneumonia. There is obviously much to be hoped here from significant epidemiological studies such as those being carried out by Frost during interpandemic periods.

2. Attempts to identify influenza or to distinguish between influenza and colds bring up sooner or later against the time honored problem of the clinical differentiation of influenza. That this is a hard nut to crack cannot be doubted. Apparently most cases of influenza, particularly those in patients ill enough to be available for

inquiry, are complicated by secondary or concurrent infections with a variety of microörganisms, and the simple influenza symptom complex—if there be such—is consequently usually distorted or at any rate variously colored.

In other diseases clinical phenomenons often fail to give clear-cut distinctions corresponding to the specificity of the attacking microbe. Even in well known and long studied diseases, such as typhoid and the paratyphoid infections, clinical differentiation may completely fail. When all is said, however, I am unwilling to believe that the possibilities of clinical study of influenza and colds have been exhausted. Several good observers consider the blood-picture of influenza with its frequent leukopenia, its absence or nearly complete absence of eosinophils and blood platelets and its relative lymphocytosis to be highly characteristic. In the latest epidemic the hematologic picture where observed was said to be strikingly uniform. Intensive clinical and laboratory study of selected cases should be of great value.

3. The significance of local variations in the prevalence and mortality of influenza offers a problem of engrossing interest. Why is it that in definite geographic areas in every great epidemic the discrepancy between the lowest and highest incidence and the lowest and highest excess mortality rates should be so great as is the case? It is stated that in last winter's outbreak in the United States, influenza first appeared in October at San Francisco, where an increase in the death rate was manifest toward the end of the month. In that city, however, the increase in deaths from influenza and pneumonia never reached a high point and the cumulative excess annual mortality rate was only 762 in 11 weeks, while in Los Angeles it aggregated 5,136 in 12 weeks. This was reversing the conditions observed in 1920, when San Francisco had a much greater excess death rate than Los Angeles. It might be tempting to cast about for an explanation of such phenomenons on the basis of population immunization, were there not a considerable number of instances in which a high or a low influenza-pneumonia mortality recurs steadily in one and the same locality, epidemic after epidemic. Pittsburgh affords one of the most remarkable instances of this sort, having had the highest—or nearly the highest—rate in any American city in 1918, repeating this record again in 1920 and ranking second only to Birmingham, Ala., in 1929.* The city of Sheffield, England, seems to be similarly liable to frequent and severe visitations of influenza. Of the latest epidemic (1929) the report of the British Ministry of

* It is, of course, impossible to say what proportion of the excess mortality is due to a high influenza incidence rate and what proportion to a high case-fatality.

Health says: ". . . as in previous inter-pandemic outbreaks, this city [Sheffield] appeared to be a local focus of infection."

A singular feature of local distribution is the patchy character of most of the large outbreaks; cities close to one another often show a marked difference in death rates. In 1928–1929 Cincinnati and Columbus, O., had considerably higher rates than Cleveland and Toledo in the northern part of the state. Dayton, however, less than 60 miles from Cincinnati, had the lowest rate of any of the five cities. In this same epidemic, also, the cumulative excess death rate (9 weeks) was more than 25 per cent greater in St. Paul than in Minneapolis. In April, 1926, the city of Glasgow, Scotland, suffered severely from an influenza outbreak, while Edinburgh, less than 50 miles from Glasgow, was hardly affected by the epidemic and showed no rise in general death rate. It was noted in Massachusetts in the 1918 epidemic that "the incidence of the infection varied widely and for no apparent reason. . . . Marlborough, surrounded by cities and towns almost overwhelmed by the outbreak, had few cases and needed no help."

Here must be mentioned, too, the change in the general character of an epidemic as it passes from one region to another. The 1928–1929 epidemic in the United States, which first appeared on the Pacific coast and travelled generally eastward, seems to have lost its epidemic push as it neared the Atlantic seaboard. The death rates in New York, Boston, Philadelphia and Baltimore were relatively little affected by the advent of the epidemic. In Germany, on the other hand, the epidemic which first appeared at Breslau about the middle of December, 1928, became much more serious as it travelled westward, the death rates in many towns in western Germany which were attacked a month later rising to twice the height of those of the towns in Brandenburg and Saxony.[8] Light should be thrown on some of the problems of this nature by the epidemiological studies now in progress of Rosenau and his associates in Massachusetts and of Smillie and others in isolated communities in several well selected parts of the world.

4. One of the most striking features of interpandemic influenza is its seasonal mortality. While it is true that several of the large pandemics have originated in summer, late spring, or early autumn, the majority and especially the minor epidemics of the interpandemic periods have shown—as judged by mortality—a marked predilection for the colder months of the year. In the large cities of the United States the weekly excess mortality rate (annual basis) reached its peak in 1920 in the week ended February 14, in 1926 in the week

ended March 27, and in 1929 in the week ended January 12. In England also, during the outbreaks of 1922, 1924, 1927 and 1929 the peak of influenza deaths in the large cities fell in the first three months of the year.

Continuous morbidity studies accompanied by climatic data should help to determine to what extent the seasonal exacerbation of the influenza death rate is due to an increased prevalence of the infection and to what extent to a relatively high case-fatality. Here also detailed and sufficiently prolonged studies in isolated communities as well as in centers of population are needed for the determination of the fundamental relation between predisposition and infection. There is little doubt that our knowledge of influenza can be greatly extended by systematic epidemiological inquiry along these lines.

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2. van Loghem, J. J. An Epidemiological Contribution to the Knowledge of the Respiratory Diseases. *J. Hyg.*, 28: 33, 1928–1929.
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Traveling Child Health Centers in Italy

CHILD health centers have been functioning for years in the larger cities of Italy, but they were practically unknown in the rural districts until 1927 when they were organized in these districts by the government. For this purpose it was planned to divide the country into a number of districts each to be under the supervision of a physician and each to be equipped with several traveling child health centers. The number of centers is gradually increasing. So far they have been established for the most part on the islands and in southern Italy. Only one center has been functioning in the North. Each of the centers now functioning serves about 20 rural settlements, 2 to 3 of which are visited in a day. In this way every settlement is visited once each week.

The staff of a traveling center consists of an especially trained physician and one or more assistants. The physician examines mothers and children, tells them the important rules of hygiene and dietetics, and distributes milk and other food for the children. The assistant visits the home and teaches the mother how to dress, bathe, and give general care to the children. Some of the centers have on the staff a specialist in obstetrics and gynecology, who examines the mothers and gives them the necessary advice. A record is kept of every woman and child examined so that it is possible to follow up the cases.

Typhoid Fever Epidemic Occurring During the Summer of 1928*

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DURING the past 26 years San Francisco has experienced 3 outbreaks of typhoid fever traceable to milk. The first occurred prior to the earthquake and fire of 1906, and the second during the summer of 1908. In both instances the cause was an acute case of typhoid fever at the producing dairy and came to the attention of the Department of Health through the reporting by the physician of the case after it had been hospitalized. It was not until 10 days later that cases of typhoid were reported in different sections of the city served by these two raw milk dairies. Subsequent to the removal of the patients and the general sanitation of the dairies the situation cleared up.

The outbreak of 1908 resulted in agitation for and, in 1910, the adoption of a pasteurizing ordinance which has since been continuously in force.

The third outbreak occurred during the summer of 1928, and came as a complete surprise because the water supply is carefully supervised and chlorinated, and, except for certified and guaranteed milk which represents but 0.5 per cent of the 52,000 gallons daily distributed, all bulk milk is pasteurized. The process and machinery, thermometers and the pasteurized milk are carefully checked each week.

Except as above stated, no typhoid fever has occurred as a result of milk or water pollution for more than 20 years. San Francisco has always a number of cases of typhoid fever reported (see Figure I for 1928), but the source of infection has been traceable to water or other causes outside of the city and county.

The first intimation of infection in the 1928 outbreak came in May, when 4 cases were reported with a history of having been infected in San Francisco some time between the middle and latter part of April. At the time, a number of instances of diarrhea and bowel disturbances had been reported by physicians, but nothing definite was obtainable

* Read before a Joint Session of the Health Officers and Epidemiology Sections of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

either from stools or urine to indicate that these were of typhoid origin. The department immediately checked on all the reservoirs supplying water, the pasteurizing plants, some 17, that were distributing milk in the city and county, and examined stools and urine from employees in these plants during the month of April.

In order to secure full coöperation of all health agencies, several conferences were held with federal and state authorities, the water company officials, and the milk and produce distributors. The reason for these conferences was the fact that after what seemed a careful survey of the water and milk supplies and the personnel of the pasteurizing plants, with negative findings, the report of cases continued.

There were a number of misleading circumstances surrounding the epidemiology of this outbreak. First, the age incidence was unusually high, 60 per cent (39 cases) occurring between 20 and 45 years—the active working age groups who drank milk with their lunches, which

FIGURE I

TYPHOID CASE REPORTED—1928

San Francisco Department of Public Health

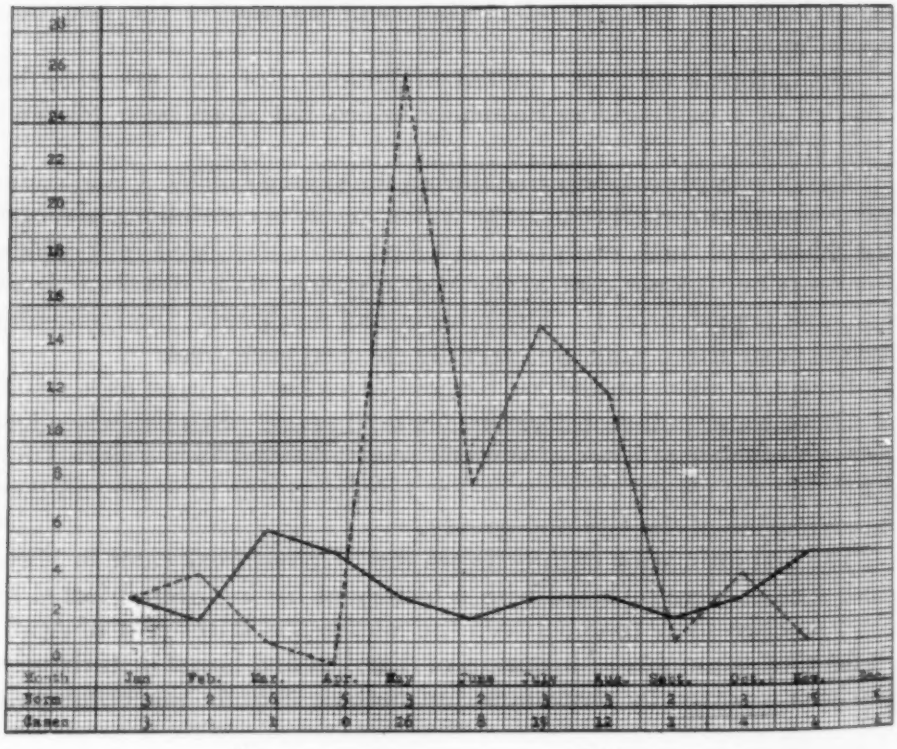
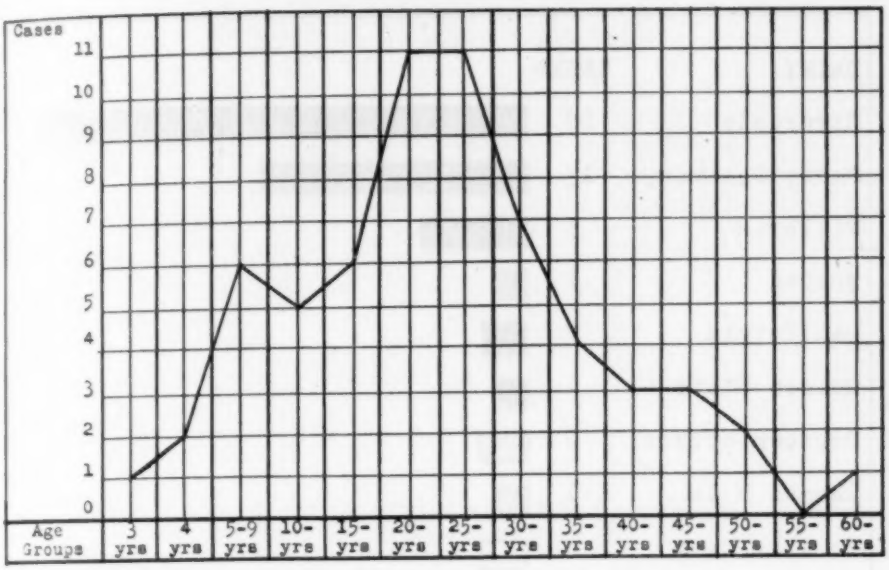


FIGURE II

AGE DISTRIBUTION—1928



had been pasteurized by one plant and sold directly from lunch wagons or neighborhood stores (see Figure II).

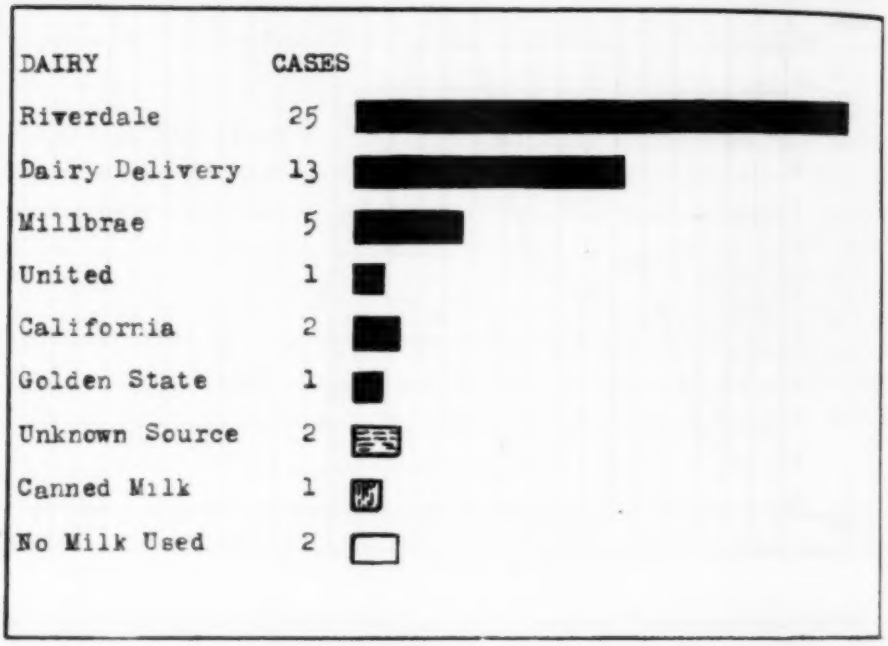
In Figure III it will be noted that 43 cases used milk from one of three sources. These three pasteurizing plants, located in different sections of the city, are under one management. Plant A, however, is the wholesale distributor to groceries, delicatessen stores, hotels, restaurants and lunch wagons where the cases were particularly concentrated. Plants B and C distribute only to family trade, but when short draw on plant A, a factor which later proved that the source of infection was plant A.

Figure II shows that there were only 14 cases under 14 years of age, the group that consumes the major quantity of milk in its dietary, and while 4 cases obtained their milk from three other dairies, additional milk was purchased from neighborhood stores, and these were supplied from plant 1.

Second, if the epidemic was due to milk, why were there not more cases? Figure I shows no cases in April, 26 in May, 7 in June, 15 in July, and 12 in August. The explanation must rest on the fact that at no time did the carrier pollute the entire supply on any one day, but only those bottles where the capping machine failed to function, and he dug out the faulty cap with his fingers and replaced it by hand. Another interesting fact was that when plants A and B needed extra

FIGURE III

SOURCES OF MILK SUPPLY. TYPHOID CASE—1928



10 Cases had double source of supply

2	cases	Plant	A	and	Plant	D	1	"	"	D and " H
2	"	"	A	and	"	G	1	"	"	D and " J
1	case	"	A	and	"	B	1	"	"	J and " K
1	"	"	B	and	"	H	1	"	"	K and " E

No Case had more than two sources of supply.

The amount of milk sold by Plant A was 8,000 gallons daily, by Plant B 11,000 gallons daily, and Plant C 3,500 gallons daily.

The total milk supply of the city is 50,000 gallons daily.

milk it was always taken from the morning batch, which was directly under the care of the carrier, and it was also this milk that went to the stores and lunch wagons. The night pasteurized lot went to hotels, restaurants, and bakeries, and not a single case could be traced to milk obtained from these sources. This information came out only after the carrier had been removed from the plant, and in the effort to check up on the reason the epidemic was not more widespread.

The personal history of this carrier developed that he was unclean in his habits, and when necessary to use toilet he failed to wash his hands, although every facility was available, which I believe explains why only that portion of the supply was infected on which he replaced

TABLE I

TYPHOID CASES REPORTED DURING EPIDEMIC, 1928

(With Onset Dates and Source of Milk Supply)

Source of Supply	Total Cases	Week Beginning: Apr 8	Apr 15	Apr 22	Apr 29	May 6	May 13	May 20	May 27	Jun 3	Jun 10	Jun 17	Jun 24	Jul 1	Jul 8	Jul 15	Jul 22	Jul 29
Plant A	25		16 18 18	23 23 24 25 25 27 27 28	30 30 May 2	6 7 10	13	26	Jun 1	4	11		25 25					Aug 1
B	13	11	15 21	28	29 May 1	10		20	Jun 1		12				12 12		28	
C	5			25	30								25 30				28	
D	1											20						
E	2							23		8								
F	1										10							
Unknown	2		21			6												
Canned Milk	1																28	
None	2								Jun 1 1									
Double Source																		
A & D	2		20 20															
A & G	2										15	21						
D & H	1				May 3													
E & K	1							25										
D & J	1										14							
J & K	1													3				
B & H	1																	Aug 4
A & B	1																28	

caps, coupled with the further fact that his stools were not at all times infective. What might have happened if he had capped all bottles by hand, as is done in some small dairies, is a question.

Third, the peculiar distribution of the cases as to the water supply, and an apparently unusual number of cases of diarrhea and bowel disturbance, justified the assumption that, in spite of chlorination, water was causing our trouble, and it was only later and after intensive study that water was definitely ruled out.

Each day the milk chart emphasized the fact that the milk of one plant harbored the infective agent, but, as stated, these facts came only after painstaking and intensive study of the situation.

WATER

An almost uniform occurrence of the earlier cases in the Laguna Honda Reservoir distribution area led to a careful study of this situation. This work might well be considered first, though the milk, vegetable and shellfish investigations were being carried on simultaneously.

The Spring Valley Water Company owns the water system of San Francisco. Its distribution is by three main supplies:

1. University Mound, a combination of waters from Crystal Springs and Alameda County sources, supplying the low area districts of the city, and comprising the principal commercial section, including heavy and light industrial districts, the financial district, the main hotel district and the residential section. The population of this supply is 260,000.

2. College Hill, a combination of waters from Crystal Springs, San Andreas and Alameda County sources, supplying the central section of the city, and comprising the light commercial and residential districts. The population of this supply is 80,000.

3. La Honda, one-half College Hill and one-half Lake Merced water. (La Honda water is sub-divided into Daly Hill, that part distributed before it reaches the Lake Honda Reservoir, and that which has passed through the Lake Honda Reservoir.) This supply reaches the higher levels of the city and comprises light commercial and better class residential districts. The population of this supply is approximately 320,000.

The cases considered were divided as follows: University Mound, 15 cases; College Hill, 6 cases; and La Honda, 41 cases.

Of the La Honda group, 12 were in districts supplied by this water before it reached the reservoir, and 29 after it passed through the reservoir.

Numerous tests were made of the La Honda water as well as that of other reservoirs. No faulty specimens were obtained from this reservoir, but from the following distributing reservoirs one specimen from each proved to be below the U. S. Treasury Standards, in that they showed the presence of *B. coli* in three tubes out of five tubes of 10 c.c. each.

The Francisco Reservoir	(University Mound Water)	July 14
Lombard Reservoir	(La Honda Water)	July 17
Potrero Reservoir	(La Honda Water)	July 17

All the other reservoirs, and these same reservoirs at other times during the investigation, gave favorable samples. Water was taken daily from 98 different locations throughout the city, and 22 samples showed water not up to U. S. Treasury Standards. We must consider

the tap fouling of some of the specimens. Two specimens were from College Hill sources, 9 from La Honda, and 11 were from University Mound.

The three main reservoirs of the above sources are open, but protected from animal pollution. With the exception of Lake Merced, the main reservoirs have wires stretched across them which prevent pollution by sea-gulls. The smaller distributing reservoirs all have roofs over them. All waters, prior to entering the main reservoirs, are chlorinated. Laguna Honda is chlorinated upon leaving Laguna Honda Reservoir. During the epidemic chlorination was required daily at the outlet of all main and distributing reservoirs.

In addition to this and to check our city water supply, samples were taken from 5 wells, 1 in a milk plant, 1 in a club, 1 in an orphan asylum, and 2 in business plants. The first 3 were below the U. S. Treasury Standards and were ordered closed. The water at the milk plant which was positive for colon bacilli on July 2, cleared up later.

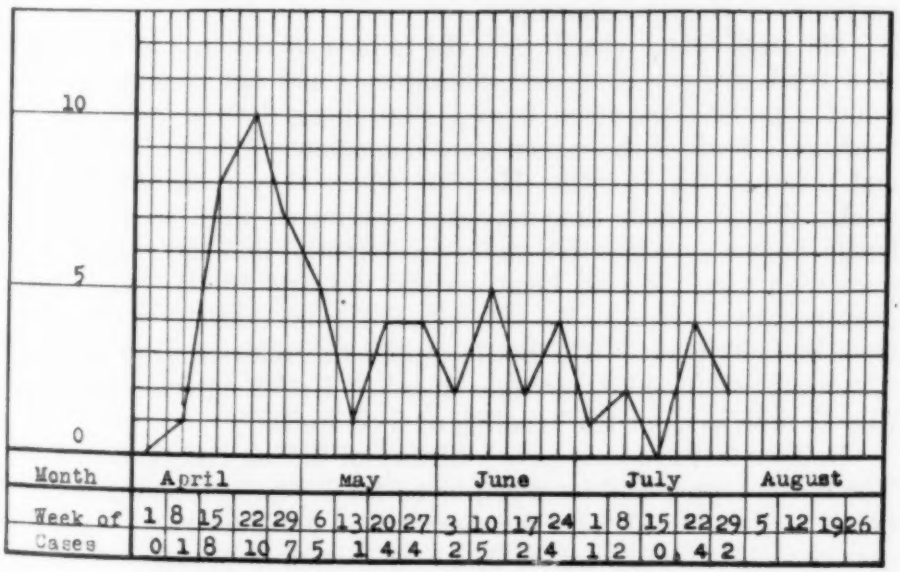
Six kinds of bottled waters were analyzed, and one was found not to comply with the standards and its sale stopped. None of the patients had used this water, so bottled waters were eliminated.

Samples of the ice supplied by the various companies to householders, restaurants, etc., were examined, and found to be excellent.

Three patients gave history of using 3 different swimming pools in

FIGURE IV

ONSET DATES—1928



this city. The routine tests of these pools showed them to be in excellent condition.

FOOD

It being the season when strawberries were coming, the physicians for a time placed the blame upon this fruit, because nearly the entire supply is raised by Japanese and Chinese who were charged with using sewage for irrigation and as a fertilizer; but a careful check of the ranches where the berries were grown, and the market showed no pollution. Oysters, shellfish, and other similar articles of food were investigated, and eliminated because of negative findings.

MILK

Early in the outbreak a careful survey was made of the pasteurizing plants, and all were found to be functioning properly. None of the cases were users of certified or guaranteed milk.

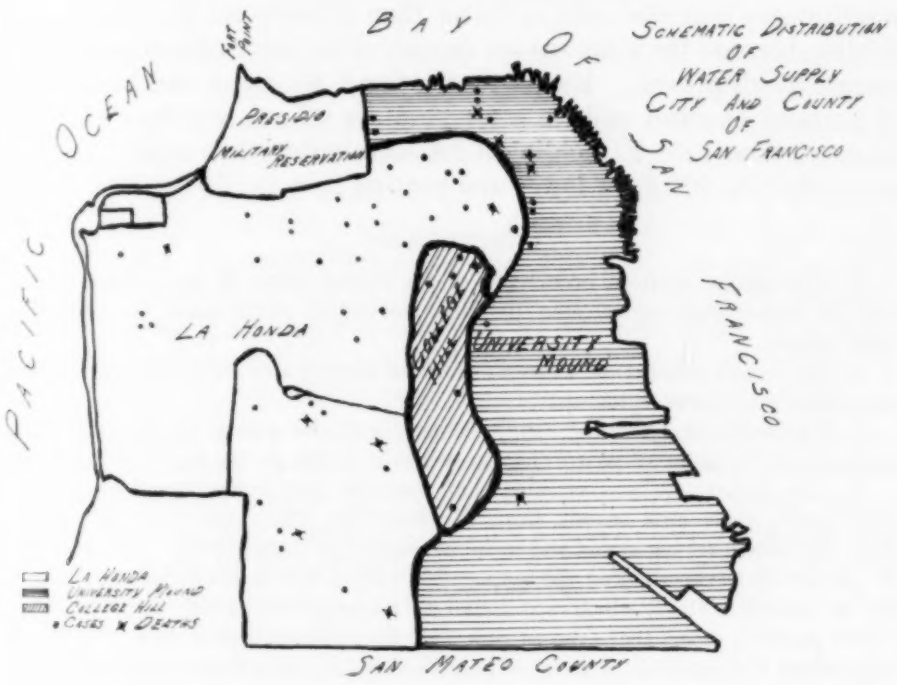
The cases, however, continued. Water and milk were then subjected to a more intensive study that definitely eliminated water, but pointed to a subsidiary plant of one of the large milk distributing depots; so it was determined to make a second examination of the employees of this particular plant. To make sure that none should escape, or substitute another's specimen, the tests were made in groups of 5. Each group was required to enter the Outpatient Service of the Municipal Hospital. A vigorous laxative was administered and specimens of stool were collected by the doctor in charge. One sample was sent to the State Hygienic Laboratory and 1 to the Department of Health Laboratory.

The state found what it believed to be a carrier in a man engaged as a truck loader. Our own laboratory could not confirm this but found a positive specimen from a man engaged on a bottle-capping machine. Both of these men were immediately removed from duty, and taken to the Isolation Hospital where they remained nearly 4 weeks, during which time repeated specimens were secured. The bottle capper gave positive stools consistently, and the truck loader, even with most vigorous laxatives and drainage of the gall bladder, gave negative results. He was released from custody but removed from the milk plant. The bottle capper was released after signing a statement prepared by the State Board of Health agreeing not to engage in milk work or the handling of food stuffs.

Neither of these men gave a history of having had typhoid fever. The bottle capper had been employed for 2 years preceding the outbreak. His removal from the dairy ended our outbreak. That this case escaped attention on the first examination brings out two impor-

tant facts frequently overlooked in field work: The organism may lose its vitality in old feces of constipated persons, but shows in numbers when these individuals take a physic; therefore, the suspected person should be given a thorough cleaning out before taking specimens of stools. Further, where cases can be traced to a dairy, even though results be negative at first, second and third examinations should be made, as carriers may be quiescent for a time, then become active and a menace to life and health. This carrier was the cause of most, if not all, of the 62 cases, 12 of which terminated fatally.

FIGURE V



This milk-borne epidemic is 1 of 8 instances in the United States where infection occurred subsequent to pasteurization. An analysis of the 17 milk-borne outbreaks charged to pasteurized milk shows that in 3 instances raw milk was substituted after pasteurization had been completed; in 3 the milk had not been pasteurized properly; in 2 was heated in a starter can; in 2 there were faulty equipment and faulty flash methods; and in 7 information was not obtainable. The conclusion is that pasteurization was not at fault in any of the 8 outbreaks, but that through the medium of a carrier, the milk was infected at some stage of bottling or handling of the finished product.

AIMS AND PURPOSES

The aim of every health officer is to create safeguards and conditions that will prevent milk-borne typhoid fever infections. How this can best be done is still a subject of controversy. The preponderance of evidence is that the pasteurization of clean milk by employees of known health will eliminate this menace. Where pasteurization has failed in the past, the fault lay in improper methods, or in not knowing the health of those who handled the product after processing.

The purpose of the pasteurization of milk is to make clean milk safe for the consumer, and not to make dirty milk clean, or its contamination inert. The argument of some pediatricians and general practitioners that raw milk is better than pasteurized for infants and children because the vitamins are destroyed by pasteurization has been repeatedly disproved. By pasteurization* we mean the heating of all portions of clean milk to a temperature of not less than 140° F., nor more than 145° F., holding it for 30 minutes, then rapidly cooling the product to 50° F. or lower and putting it in sterile bottles.

CONCLUSIONS

1. The almost uniform occurrence of the earlier cases in the Laguna Honda reservoir water distribution area justified the active steps taken to study this water supply.

2. The small number of cases in children among the earlier groups pointed away from milk-borne epidemic.

3. The outbreak occurring simultaneously with the advent of strawberry season justified the slight suspicion that strawberries might be the source of infection.

4. The department was satisfied that upon the first indication of numbers of cases having their milk supply from the Riverdale plant, the cause lay in this plant, and began taking stools and urine of employees immediately. The fact that the carrier who is considered the responsible person was required among the very first to submit a stool, which was found to be negative, though the later stools proved positive, shows that even at that time the epidemiological work done would have solved the problems, but for a possible fault in laboratory or administrative technic.

5. The epidemic could not be charged to faulty pasteurization, but to a carrier handling the finished product.

6. The importance of knowing that all persons engaged in handling or processing milk are free of communicable disease, and that examinations attesting this fact shall be made not less than once each year, is manifest.

7. All milk, not excepting even certified or guaranteed, should be pasteurized before distribution to the consumer.

REFERENCE

1. Drinking Water Standards, *Pub. Health Rep.*, Apr. 10, 1925.

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* This definition is the writer's. No temperature has been officially adopted for pasteurization. The tentative standard of the A. P. H. A. requires at least 142° F. for 30 minutes. Ed.

First Aid Cabinet of a School Nurse, Her Standing Orders for First Aid, and Her School Nursing Procedure*

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IT would appear that there should be two parts to this paper, one dealing with the nurse's equipment and first aid activities and one with her other school nursing procedures. They can be discussed in a related manner if we consider both the first aid and other activities from the viewpoint of the school nurse as an educator.

All public health workers must be educators, but the school nurse has particular responsibilities along this line. She is working with an organization which has for its goal the preparation of children for life, through the processes and activities we call education. The leaders of this organization, the superintendents and principals of schools, have proclaimed by means of individual statements and through committees of their national organization that their first objective is the health of the child—present and future. To help them realize this objective there are school nurses and school physicians. The nurse, working with our educational institutions, and frequently employed by them, must consider herself an educator, and take advantage of every opportunity to increase her knowledge of educational aims and to increase her skill in educational methods.

The nurse is not always at the school building when first aid treatment is needed, and children will have accidents away from the school; consequently it is desirable that teachers and pupils be taught how to take care of the minor accidents that occur in school or on the playground. Every case that comes to the nurse should be considered by her as an opportunity for education in the principles and methods of first aid treatment. The interest of the child is aroused and he is anxious to know what to do and how to prevent further trouble. The hows and whys of the treatment should be explained in words that can be understood by the child. Perhaps the most important explana-

* Read before the Public Health Nursing Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

tion that the nurse can give is in regard to the application of, and the need for, sterile dressings. There are still many children and parents who do not realize the danger of infection being carried into cuts and abrasions from outside sources and from soiled cloths put over wounds. They should be taught that cleaning a wound and keeping it covered with a sterile dressing are the most important factors in its healing—more important than the application of various kinds of ointments.

Although words are needed for explanations, much is taught without words. The nurse should watch her technic carefully, and realize that her methods will be imitated. She should realize that her reaction to the case will affect the child's attitude in regard to its care and prognosis. She should exhibit a sympathetic attitude, taking care not to exaggerate the importance of slight injuries, while urging the proper care of serious ones without alarming the child.

What are the principal conditions which the nurse will be asked to treat? The majority of cases will be cuts, bruises and abrasions resulting from falls on the playground or in the school building. There will be cases of toothache which the child will expect to be relieved immediately. There will be cases of foreign particles in the eye. Besides these, nurses are also called on to treat, or to teach the mother to treat, cases of scabies, impetigo and pediculosis.

What materials should be kept in her first aid cabinet to treat these conditions? The following list is adequate:

Tongue blades	Ammoniated mercury ointment	70% alcohol
½ and 1½ inch roller bandage	Adhesive tape	Zinc oxide ointment
Absorbent cotton	Thermometer	Green soap
Mercurochrome solution	Scissors	Aromatic spirits of ammonia
Tincture iodine	Medicine dropper	Boric acid solution
Oil of cloves	Paper towels	

When called upon to treat certain conditions, the nurse will need a supply of sulphur ointment, bichloride tablets or kerosene. It is not necessary, however, to keep these materials in her first aid cabinet.

Standing orders in regard to treatment may best be outlined according to the various types of cases:

Cuts and Abrasions—Clean the wound thoroughly. Cleaning is the most important first aid measure. The area may then be swabbed with mercurochrome, a dry sterile dressing applied and held in place with a roller bandage.

Toothache—The nurse should see that every child who is sent to her on account of a toothache makes an appointment with the dentist, preferably with the family dentist; but if the family is unable to afford such services the child should be sent to a dental clinic or school den-

tist. The nurse should see that the appointment is kept. Teachers and parents should be made to feel that a child with an aching tooth has been neglected. Attention and regular dental examinations will eliminate the nurses' toothache problem. First aid treatment consists of removing particles of food from the cavity and inserting a pledget of cotton saturated with oil of cloves.

Foreign Particles in the Eye—Foreign particles located on the eyeball or the lower lid are readily seen and may be removed by gently touching them with a piece of cotton on a toothpick. If a cinder, or other particle, is on the upper lid, the lid must be everted before a good view can be obtained. This is not difficult and practice will develop a skill that permits one to evert the lid with little or no discomfort. After the particle is removed it is well to wash the eye with a solution of boric acid. In removing a foreign particle the nurse should touch the particle with the cotton pledget very gently. If the object is not readily removed, the nurse should immediately refer the case to a physician.

Impetigo—This is contagious and children with impetigo should be excluded from school. The treatment consists of thorough cleaning, including removal of all crusts, followed by the application of an antiseptic dressing, as ammoniated mercury ointment.

Pediculosis—The parts affected should be vigorously scrubbed with soap and water, then thoroughly washed with a 1–500 solution of bichloride of mercury or with kerosene. The ova which are killed by this treatment may be loosened from the hairs and removed by washing with vinegar or 5 per cent acetic acid. The clothing should be carefully examined and if infested be sterilized. Children with live pediculi should be excluded from school.

Scabies—The treatment of scabies needs to be undertaken in a systematic manner if it is to be effective. The ointment frequently recommended consists of 4 parts of lard to 1 part of powdered sulphur. This is smeared over the body for three nights, and followed each morning by a warm soap bath. Clean clothing should be put on each morning, the soiled clothing being thoroughly cleaned.

Many school health departments have forms on which are printed directions for the treatment of scabies and pediculosis together with the drugs to be used. These forms are very convenient and save the nurse considerable time.

It will be well to state what conditions the nurse may treat and what her general policy should be in regard to treatment. As a general policy I suggest this: A school nurse should not accept responsibility for the treatment of any condition—she may treat cases on

orders of a physician when he assumes the responsibility, but otherwise her activities are to be limited to first aid. All cases requiring treatment should be referred to the family physician or clinic physician and, regardless of the need of any individual case, the nurse should not treat it except on instructions from a physician. In some school systems the school physician will give nurses general instructions as to the treatment of scabies, pediculosis and mild cases of impetigo which have been neglected. In such instances, the responsibility is the physician's, even though he does not see the case.

Pediculosis may be considered an exception to this general policy. I can see no objection to the nurse undertaking the treatment of this condition.

Cases of scabies, impetigo and pediculosis are associated with a lack of cleanliness of the body and of the clothing. Every case is an opportunity for instruction in personal cleanliness. It is not one child that has to be instructed, but the whole family.

First aid work and minor treatments are important parts of the school nurse's duties, but they should occupy but a small portion of her time. The success of a nurse in her first aid work is not measured by the number of cases she treats, but by her proficiency in teaching older children, parents and teachers to take care of these conditions. As she is able to do this she will have more time to devote to more important duties, such as classroom inspections and home visitations.

Classroom inspections are a valuable part of the nurse's activities. Their purpose is to detect the presence of any signs indicating the onset of acute communicable diseases, and physical defects that may be remedied. The usual method is for the nurse to stand with her back to the window while the pupils pass by her in line. As a pupil approaches he pulls down the lower eyelid, exposing the conjunctiva. Then the mouth is opened and the head thrown back, to observe the pharynx, tonsils and teeth. Pupils are asked to show their hands, palm and back, with the fingers spread. The skin of the hands, arms, face and neck is thus exposed. The hair is inspected for the presence of pediculi.

By such an inspection the nurse is able to observe some of the common signs of the communicable diseases, flushed face, rash, reddened or watery eyes, running nose, and inflamed throat. She will also notice some children who are urgently in need of dental attention, and some whose tonsils are abnormal. The general appearance of some will lead her to refer them to a physician for further examination. She will take others to the school office or examining room for

a better inspection, for example, pupils whose throats are not visible without the use of a tongue depressor.

When doing classroom inspections, as in first aid work, the nurse is primarily an educator. In the case of inspections, the teacher is being educated, and the nurse's aim is to help the teacher to obtain the knowledge and skill necessary to conduct intelligent and useful health inspections of her pupils. Inspections to detect cases of communicable diseases are of little value unless conducted daily. It is impossible, in any school system, to have a nurse inspect every pupil every morning, but teachers can make such inspections. Most teachers have had no training along this line, and until normal schools supply those who have had such training it will be a function of the school nurse to train them.

On entering a room to make a health inspection, the nurse should acquaint the teacher with the purpose of the inspection and convince her of its value. This may be followed by a statement in regard to the danger of allowing a child to stay in a classroom when in the early stage of a contagious disease. A fact to be emphasized is that the various children's diseases are most contagious in their early stages. Following such an explanation the nurse makes an inspection while the teacher looks on. The nurse carefully demonstrates to the teacher any condition which she regards as a deviation from the normal. At a subsequent visit the teacher may make the inspection while the nurse looks on. Questions in regard to the practice of health habits may be asked at this time. Commendation for children who have practiced the health habits taught, or who have had remediable defects corrected, helps to develop a favorable group attitude.

There are two points requiring emphasis when the teacher is asked to make health inspections. One is that the teacher need not touch any pupil. The inspection is made through the eyes, and the danger of passing an infection from one child to another is eliminated by instructing the teacher not to touch any pupil. The other is that the teacher should not diagnose any condition which she observes. The diagnosis is the province of the physician who is going to treat the case. The teacher is not interested in what disease the child has. She is interested only in determining the presence or absence of any deviation from normal which indicates that the child may be suffering from some acute disease. When she finds such a deviation she excludes the child from school for the protection of the other pupils. The exclusion is not based on the diagnosis of any definite disease, but solely on her suspicion due to changes in the appearance of the child.

The most important duty of the school nurse and the one of greatest value is the home visitation. She may educate parents, pupils and teachers to decrease the need of first aid services, and teachers can develop such skill and experience in conducting inspections that the nurse can be relieved of much of this activity; but none can relieve her of the responsibility and privilege of home visitation. In this work she acts as a correlator of the work of the school and the home in promoting the growth and development of the child.

The first objective in making a visit is a friendly contact with the home, a contact that will help to create in the parent a coöperative attitude toward the activities of school and health officials. Words of commendation or praise in regard to the child will help to develop this. No defect or remediable condition should be mentioned until the nurse has spoken of every favorable condition. Consideration must be given to the point of view of the parent, who should have an opportunity to express her knowledge and opinion of her child. Particularly in regard to protection against diphtheria and smallpox, the nurse must recognize and respect the right of a parent to decide whether or not a child is to receive such treatments. Protection should be urged, and the nurse should give all the facts she can about such treatments, but never in such a way as to antagonize a parent. It means more to keep the good will of an individual than it does to increase by a fraction the percentage of children protected.

Home visits are made for various reasons. Some are to inform parents of conditions in a child that are interfering with his school progress or hindering his proper growth and development. Others are to have the mother consider changes in the school program, it being thought that the child would benefit by omitting some work, or by being in an open window room. Many visits are made for the purpose of talking with parents regarding the health habits of the child and having him vaccinated against smallpox or diphtheria. Regardless of the primary reason for making the home call, there are a few underlying principles that may be followed.

The first is that every child be considered as a whole child, and not as made up of tonsils, teeth, eyes, ears, etc. The immediate reason for making the home call may be to give information regarding clinical facilities for tonsillectomy, but while talking about tonsils the nurse should discuss the child's health from all angles—his nutrition, his practice of health habits, and his behavior. In regard to the latter, the value of mental hygiene is recognized everywhere, and the school nurse should be prepared to advise in regard to mental as well as physical hygiene.

The second is that the nurse consider the family as a whole, and not only the child. Where a generalized public health nursing program is in effect this idea is carried out to perfection, but in many places where nurses do school nursing only, there is a tendency for them to ignore members of the family. A knowledge of the health condition of the father and mother may help to understand better the conditions she finds in the child. The preschool child should receive particular attention.

As a third principle, I contend that every home visitation should be educational, the nurse considering herself as an educator, and her aim the instruction of the parent in regard to the child's condition and the fundamentals of physical and mental hygiene. Regardless of the reason for the visit, the close should find the mother in the possession of some health knowledge which she did not have before. When leaving, can the nurse answer "yes" to the questions, "Have I given the parent some ideas that will enable her to care better for the health of her children?" and "Have I helped her to realize that the most important thing that she can do for them is to guard their health?" If she can answer "yes," then her visit has been educational.

My opinion in regard to the status of the school nurse is evident from the brief discussion of three of the important procedures in her program. I regard her as a health educator working with an institution which considers health as an important objective. She is a specialist in child health, and, as such, is capable of advising teachers and parents in matters pertaining to the physical and mental health of children. She avoids duplication of activities that can be taken care of by parent or teacher, and correlates their efforts to develop a nation of strong, robust children.

With this opinion of the status of the school nurse, the standing orders of the school nurse in regard to first aid, classroom inspections and home visitation, may be summarized as follows:

FIRST AID

1. Consider each case referred to you as an educational opportunity.
2. Advise home care of minor accidents which occur at home and after school.
3. Let older pupils learn first aid treatment by doing their own first aid work under your supervision.
4. Accept no responsibility for treatment. (The treatment of pediculosis may be considered an exception.)

CLASSROOM INSPECTION

1. Inspect all pupils as early as possible each semester.
2. Educate each teacher in the methods of health inspection. Plan to super-

vise an inspection which she makes. Impress upon her the importance of daily inspections for the control of communicable diseases.

3. Do not diagnose any condition found.

4. Do not touch children during classroom inspection; if more detailed inspection is needed, have the child report to the office or examining room.

HOME VISITATION

1. Allow nothing to encroach upon the time allotted for visits to homes—it is the most valuable part of your work.

2. Be tactful; avoid antagonizing parents and help them to develop a sympathetic and understanding attitude toward health and school officials.

3. When making a home call consider the child as a whole, and be interested in the whole family.

4. Make every visit a health lesson for the parent.

Sterilization for Human Betterment

THE final summary of the problem, as estimated by Gosney and Popenoe in their book of this title, after studying the results of over 6,000 operations done in a period of 20 years, is conservative but important. No such extensive experiment in this field of endeavor has ever been carried on before. They feel that the experiment has been a distinct success. There have been practically no bad effects; there are rare failures of the operation; the mortality is practically nil, and the results are, presumably, all that could be expected. It certainly tends to prevent the birth of many inferior children, thereby allowing the proportion of superior children born in the population to increase. It also reduces definitely the burden of caring for defectives and dependents.

The program of sterilization for eugenic reasons is usually considered as purely a negative measure, but the authors of this interesting book believe that that is only part of what physicians and others should advocate. There should always be a positive program for the encouragement of good breeding to go along with the negative one of sterilization.—Editorial, *New England J. Med.*, Oct. 31, 1929, p. 893.

Anthrax as an Occupational Disease*

HAVING presented statistical reports at two previous meetings of this section, in 1925 and 1927, on the prevalence of anthrax infection in industry, your committee was asked to report again this year, so that an indication might be had as to the present trend of the anthrax menace.

The collection of reliable data as to anthrax infection has each time presented a difficult problem, and our reports are given with the distinct understanding that they represent an understatement of the prevalence of the infection. We are glad to report that this year we have obtained data from more states than formerly, and more states reporting have been able to give us some definite information as to probable sources of infection, location of lesions, and methods of diagnosis and of treatment.

In 1925 we reported cases and deaths from 15 states over a period of 5½ years. In 1927, 30 states were heard from, reporting for a 3½-year period, 23 of the 30 reporting one or more cases. The present report covers from January 1, 1927, to July 1, 1929, overlapping the previous one by 6 months. This report lists returns from 38 states, 21 reporting cases or deaths, or both, with 17 reporting no cases. Of the latter, 2 report animal anthrax and infer that human anthrax may have occurred but not been reported. Some states, reporting deaths only, state that as anthrax is not reportable they have no figures as to its prevalence.

Table I lists 162 anthrax cases with 30 deaths, as compared with 222 cases and 25 deaths for the corresponding 2½-year period in the 1927 report. This is an encouraging decrease in number of cases, but a definite increase in mortality, from 11.27 to 18.5 per cent. Six states reporting cases between 1924 and 1927 report no cases since July 1, 1927 (Delaware, Indiana, Kansas, Kentucky, Minnesota and Virginia); 2 states reporting no cases previously report cases in the 1927–1929 period (Florida and Maine); and 3 not heard from before report cases this time (Arkansas, Oregon and Rhode Island). The tannery states, Massachusetts, New Jersey, New York and Pennsylvania, continue to report cases each year, but only New York shows any appreciable increase. Of the 37 cases reported from that state, 23 were

* Report of the Committee on Anthrax presented to the Industrial Hygiene Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 3, 1929.

TABLE I

ANTHRAX CASES AND DEATHS IN 38 STATES

STATE	Total for Period		1927		1928		1929 to July 1		
	Cases	Deaths	C	D	C	D	C	D	
Arizona	0	0	0	0	0	0	0	0	
Arkansas	6	4	3	2	3	2			
California	7	1	1	0	6	1	0	0	
Connecticut	4	0	1	0	2	0	1	0	
Delaware		0		0		0		0	Animal anthrax reported
Florida	1	1	0	0	0	0	1	1	
Georgia	0	0	0	0	0	0	0	0	
Illinois	1	1	0	0	1	1	0	0	
Indiana	0	0	0	0	0	0	0	0	
Kansas	0	0	0	0	0	0	0	0	
Louisiana	9	1	3	0	6	1	0	0	
Maine	1	1	1	1	0	0			
Maryland	0	0	0	0	0	0	0	0	
Massachusetts	20	1	5	0	8	0	7	1	
Minnesota	0	0	0	0	0	0			
Mississippi	5		4		1				Probably other cases—Animal anthrax prevalent
Missouri	2	1	1	1	1	0			
Montana	0	0	0	0	0	0	0	0	
Nebraska	0	0	0	0	0	0			
New Hampshire	1	1	0	0	1	1			1928 death records not yet compiled by disease. Report covers July to July periods
New Jersey	16	3	6	0	10	3			
New Mexico	0	0	0	0	0	0	0	0	
New York	37	6	12	3	16	2	9	1	
North Carolina	1	1	1	1		0		0	
Ohio	2		0		2				
Oklahoma	0	0	0	0	0	0			Animal anthrax reported
Oregon	7	0	1	0	6	0	0	0	
Pennsylvania	29	8	6	2	15	5	8	1	
Rhode Island	1	0	0	0	1	0	0	0	
South Carolina	0	0	0	0					
South Dakota	0	0	0	0	0	0	0	0	
Tennessee	5	0	2	0	3	0			
Texas	7	0	0	0	6	0	1		
Virginia	0	0	0	0	0	0	0	0	
Washington	0	0	0	0	0	0	0	0	
West Virginia	0	0	0	0	0	0	0	0	
Wisconsin	0	0	0	0	0	0	0	0	
Wyoming	0	0	0	0	0	0	0	0	
Total 30 states	162	30	47	10	88	16	27	4	
Per cent fatal	18.5		21		18.1		14.8		

C = cases
D = deaths
Blank spaces indicate no report for that year

traceable to wool handling (in the last report Massachusetts had 18, New Jersey 27, New York 29 and Pennsylvania 42).

Table II lists cases and deaths by states and sources of infection, but not by year of occurrence. In 1927, 18 out of 23 states reported one or more cases in which the sources of infection had not been determined, while now only 14 of the 21 reporting list such cases. This is a distinct improvement.

TABLE II

ANTHRAX CASES AND DEATHS IN 21 STATES: BY SOURCES OF INFECTION

January 1, 1927, to July 1, 1929

	Tannery		Wool		Live Stock		Shaving Brush		Horse Hair		Leather		Laboratory Infection		Source not reported	
	Cases	Deaths	C	D	C	D	C	D	C	D	C	D	C	D	C	D
Arkansas	—	—	—	—	6	4	—	—	—	—	—	—	—	—	—	—
California	—	—	—	—	4	0	—	—	1	0	—	—	—	—	2	1
Connecticut	—	—	2	0	—	—	—	—	1	0	—	—	—	—	1	—
Florida	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Illinois	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Louisiana	—	—	—	—	4	0	—	—	—	—	—	—	—	—	5	1
Maine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Massachusetts	15	0	3	0	—	—	—	—	1	0	—	—	1	1	—	—
Mississippi	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—
Missouri	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1
New Hampshire	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
New Jersey	13	2	2	1	—	—	1	0	—	—	—	—	—	—	—	—
New York	8	0	23	2	1	1	1	1	1	0	2	0	—	—	1	1
North Carolina	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
Ohio	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	0
Oregon	—	—	—	—	4	0	—	—	—	—	—	—	—	—	3	0
Pennsylvania	10	3	12	1	—	—	—	—	6	3	—	—	—	—	1	1
Rhode Island	—	—	1	0	—	—	—	—	—	—	—	—	—	—	—	—
Tennessee	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	—
Texas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	—
Total	46	5	43	4	21	7	2	1	10	3	2	0	1	1	37	8
States reporting	4	2	6	3	7	4	2	1	5	0	1	0	1	1	14	7
Per cent fatal 14.8	10.8		9.3		33		50		30		0		100		21.6	

C = cases
D = deaths

This table, taken with Table III showing the percentage of cases traced, or untraced in this report and in the previous one, shows a definite shift in the picture of anthrax infection. Forty-six cases are

TABLE III

PER CENT OF REPORTED CASES TRACED TO SOURCE
(based on total of traced cases)

Source	1924–1927	1927–1929	(6 mo. overlap in data periods)
Tannery and Leather	46	36.8	
Wool	28	34.4	
Live Stock	11	16.8	
Shaving Brush	3	0.8	
Hair and Fur	7	8.0	
Professional	2	0.8	
Per cent of cases untraced	52 −	22 +	

traced to tanneries or tannery products, 36.5 per cent as against 46 per cent in the last report. This represents a yearly average of 18+ cases, as against slightly over 19 in the former report.

The 1927 report showed wool an increasing source of infection and prophesied that this increase would continue. In 1925 wool was responsible for less than 3 per cent of the traced cases, in 1927 for 28, and in this report for 34.1 per cent. There were 43 cases, or 17.2 per year, as against 12 per year in the 1927 report. This is a definite increase in cases as well as in percentage.

Anthrax due to animal infection is apparently also on the increase, and we feel sure that the tables understate this increase. In some states, where no other industrial sources are listed, some of the cases not traced were undoubtedly due to infection from livestock. The 1927 report listed an average of less than 5 cases per year traceable to this source, or 11 per cent of the traced cases. This report lists 21 cases so traced, 8.4 cases per year, or 16.6 per cent of the traced cases. Either anthrax from animal contact is on the increase or these cases are being much more often recognized. In the 1927 report only 3 states listed such cases, while in this report 7 do so, 2 others inferring that there were probably such cases unreported where animal anthrax was recognized. Three of four animal source cases in one state (Oregon) were definitely traced to fly bites, the flies acting as carriers from sick animals.

The shaving brush menace, so alarming some years ago, seems to have almost entirely disappeared, as only 2 cases were reported from this source in the 2½-year period. There is little change in the incidence of anthrax from horse hair. One fatal case of infection in a laboratory worker is reported.

The last line in Table II shows the percentage of fatalities in each source group. With a general fatality of 18.5 per cent, that from tannery anthrax is 10.8, from wool 9.3, from untraced cases 21.6, from

horse hair 30, and from animal contact 33 per cent, the last an extremely high fatality from any infection introduced through skin lesions. The high fatality in untraced cases is probably due to the predominance of animal contact infection in this group. This high fatality rate from animal contact cases cannot be blamed on lack of serum treatment, as 5 of the 7 received serum. The high rate for horse hair is based on only 10 cases and may or may not be significant.

This year's questionnaire for the first time elicited sufficient information as to methods of diagnosis, treatment, and location of lesions to allow of tabulation. These data are given in Table IV.

TABLE IV

Diagnosis—where reported	Total Cases	Fatal
Cases diagnosed clinically only	93	7
" " by laboratory	46	10
Location of Lesions—where reported		
Limbs	43	1
Trunk	4	1
Face; neck or head	64	8
Internal	1	1
Methods of Treatment—where reported		
Serum	59	10
Serum and surgery or antiseptics	36	2
Antiseptics or surgery, or both	18	1

Of the 162 cases, 93 were reported as diagnosed clinically, and in 46 other cases laboratory aid was obtained. No data were given for 23 cases.

Types of lesions were classified in four groups: (1) limbs, hands or feet, 43 cases with 1 death; (2) face, head or neck, 64 cases with 8 deaths; (3) trunk, 4 cases with 1 death; (4) one fatal case of internal anthrax from horse hair. These figures agree with the general conception of relative danger. In the remaining 50 cases there was no information as to site of lesion.

Fifty-seven cases were treated with serum alone, with 10 fatalities —5 in those due to animal contact. Thirty-six cases received serum and surgical aid, with 2 fatalities, and 18, 1 of them fatal, received no serum. Treatment was not reported for 49.

SUMMARY

1. An apparent increase in interest in anthrax infection as evidenced by increasing detail in reports, especially as to tracing infection, diagnostic methods, infection sites and methods of treatment.

2. A general decrease in the number of cases reported, confined to tannery and shaving brush infections, the latter being almost negligible. No decrease in infection from horse hair and a definite increase from wool handling and contact with livestock.

3. A comparatively low fatality from tannery anthrax, due to constant watchfulness and prompt intelligent treatment, and an alarmingly high fatality in anthrax from animal contact, possibly due to the rapid spread of many actively growing vegetative bacilli introduced into wounds, as against the longer incubation necessary for the development of the comparatively few spores derived from the handling of hides, skins, or hair.

HENRY FIELD SMYTH, *Chairman*
VOLNEY S. CHENEY

Undulant Fever Germs Hard to Kill

ORDINARY pasteurization methods will not kill the porcine strain of the undulant fever bacillus. This has been demonstrated by Dr. Lloyd Arnold, professor of bacteriology and pathology at the medical college of the University of Illinois and head of the Chicago branch of the diagnostic and research laboratories of the State Department of Public Health, who found that 40 minutes at 140° F. were required to kill the porcine strain of the undulant fever organism.

Whether or not the ordinary milk pasteurization process would so attenuate the bacilli as to render them harmless has not been determined by Dr. Arnold.—*Illinois Health Messenger*, Jan. 1, 1930.

Tests at the New York State Veterinary College have also shown that the abortion bacillus of the porcine strain is not killed by pasteurization at 140° F. for 15 minutes. Experiments on electrical pasteurization by Drs. Huddleson and Carpenter at the Michigan State College indicate that the flash continuous flow method at 160° F. is efficient. In one case, however, the abortus resisted 155° F., though tubercle bacilli were killed.

It is evident that the prevention of undulant fever, especially that caused by the porcine variety of the causative organism, presents a new problem in pasteurization.

Some Difficulties in the Collection of Records*

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THE records discussed in this paper are those secured and maintained in bureaus of vital statistics. The purpose is not to present the discovery of some new method by which records may be collected with entire completeness and accuracy, but rather to start a discussion by the members in our section with a view to an exchange of ideas, thereby bringing about a more sympathetic tolerance for the "other fellow" after viewing the difficulties that must be surmounted before he attains results.

This section brings together representatives of many different institutions having to a certain degree a common interest since the problems affecting one, to some extent at least, affect all. For convenience, let us divide the membership of this section into two groups; those in the first group to include the highly trained statisticians who are equipped to study scientifically and interpret results; the second group to include registrars whose first obligation is the responsibility of securing original records. For many years, I have attended every meeting of our section with an eagerness for more information and new ideas and have gleaned from the papers, discussions and personal contacts, information that has been an inspiration for harder work and more interest in my own department.

We all have our difficulties, we all belong to the same section, and still one member's difficulties are often very remote or unusual to those of another. It is, therefore, with this in mind that I have for a number of years looked forward to a section meeting when a general discussion would bring our members to a better mutual understanding. In my opinion, the spendid work of our special Committee to Aid Completion of the Registration Area, under the leadership of Dr. Dublin, has accomplished a great deal more than the annexing of additional states to the area. It has enlarged the scope of sympathetic feeling between the two groups.

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

One of the greatest difficulties in collecting records is finances. Legislatures should be shown why large appropriations are needed, and, when given, every cent should be spent—wisely, of course, but spent. One of the surest ways to gain recognition is by the judicious spending of money for health purposes. Money in the state treasury may aid in checking an epidemic, but it is far better to prevent the epidemic by spending the money in protecting those who would have suffered.

States and cities with enormous populations usually have financial resources with which to collect and study records. The man highly and technically trained in the science of numbers, even though he has no unusual executive ability, plays a very important part in such a bureau. On the other hand, the outstanding qualifications necessary for the registrar of a state, pioneering in the operation of a vital statistics law, are organizing ability and legal knowledge. If those of our members in the second group can be given inspiration by the results obtained with the records analyzed and studied by the first group, the activities of our section meetings will have an added attraction. In addition to bringing the members of the second group back to the meetings each year, it will stimulate study and intelligent reading, and thereby raise the standards.

A sympathetic understanding of the problems and difficulties surrounding the collection of records is needed if we expect to have a section strong enough to include the interest and enthusiasm of all. Those who have worked in old, established bureaus where law and order hold sway and the doctors and undertakers accept the law as obligatory, know very little about the problems of a pioneer bureau where public sentiment has first to be created before anything like full appreciation of the mandatory elements in the law can be obtained. No one would think of questioning the advisability or value of studying and analyzing to the nth degree, provided the data are complete enough to be representative and the money expended does not unjustly rob the machinery necessary to produce complete records. However, the registrar in a bureau where funds are limited, may become so interested in statistical methods that his machinery weakens, thus causing an irreparable gap in the records with which he is entrusted. On the other hand, there is, of course, the danger of putting all one's time and effort into the collection of records and not polishing the rough diamond which has been mined.

During the past 18 years, I have traveled in practically every county of two states and from personal observations have found conditions that would astonish those who have confined their activities to

thickly populated areas where registration has been going on for many years. The importance of a birth certificate or a death certificate is not appreciated in many localities. In the Vital Statistics Section, we have spent considerable time worrying over what and how much shall be included in these certificates. This is important, but there are many districts where just the securing of a birth or a death certificate challenges the best efforts of a worker. There are still many places where living conditions are such that there is neither a doctor nor an undertaker.

Why worry about the International Classification of Causes of Death when the only information obtainable is that the deceased died from "misery in the stomach"? How can a birth certificate be secured if there is no doctor and the father considers it an insult if you pry into his family affairs by asking questions about his baby? A rare condition affecting the records in Florida last year was caused by the West Indian hurricane. It was not possible in many cases to identify the deceased; in fact, it was not even possible to classify by color, age or sex. Many bodies were not recovered; a great many bodies were cremated in the storm area; and in one instance, 527 bodies were transported in boxes for interment trench-wise. With limited help, flood conditions, decomposition, etc., even a count could not be expected that would represent the loss of life.

Putting a law on the statute books does not necessarily mean that the records provided for in that law will come tumbling into the bureau. On many occasions, I have been met with some such question as this: "It's the law, isn't it?" it being assumed that just because it is a law, 100 per cent of the records should be in the vault. As a matter of fact, the securing of complete records is a man-size job in many bureaus. There are several other laws known to most of us that are not 100 per cent enforced. Law enforcement in connection with the collection of records stands out as one of the important factors in rating efficiency. Our policy has been to make the court a last resort. First investigate all violations of law very thoroughly; give the other fellow the benefit of the doubt in every case; be lenient with those who are ignorant of the law and firm with those who are wilful violators. Study law enforcement in different localities; be firm but sympathetic in the enforcement of the law; and familiarize yourself with living conditions. Where ignorance is the cause of the violation, an educational campaign in that particular district teaching the importance, necessity and usefulness of records, will bring much better results than a hasty prosecution.

The average registrar looks with wonder at the results attained by

the highly trained statistician in much the same attitude that we all look on the radio and airship. Results are often understood by those who are not trained in the method of procedure. Many expert operators of cars are very poor mechanics and in many cases a very efficient mechanic may prove to be a mediocre operator. The statistician should be as familiar as possible with the problems confronting the registrar and his difficulties in securing the necessary records and the registrar should be encouraged and urged to use every available moment in well planned study and work to enlarge his knowledge of scientific methods.

Georgia's Surgical Pioneers

HEALTH Commissioner Wynne adds to its usefulness and extends the interest of his departmental bulletin by incorporating in it brief historical records of, and philosophical reflections on, the art of healing and preventing disease. Recently these included remarks on priority in the use of sulphuric ether to produce anesthesia. These remarks brought from Lamartine G. Hardman, who takes as much pride in his record as a physician and surgeon as he does in the fact that he is Governor of Georgia, a letter of surgical reminiscence which will appeal to the layman as well as to members of his profession.

Governor Hardman recalls the notable Crawford W. Long's pioneer use of sulphuric ether in an operation on James Venable on March 30, 1842, in Jefferson, Jackson County, Georgia. Governor Hardman was largely instrumental in putting up the monument to Long which marks that historic town. On Blackwells Island in 1877 he saw the first demonstration of Sir Joseph Lister's spray utilizing carbolic acid as an antiseptic in operations and for wounds. Sir Joseph's discovery of the potentialities of carbolic acid in control of gangrene is commonly fixed as of 1867. Governor Hardman writes that five years before this, in 1862, Dr. L. A. Dugas of Augusta, Georgia, during the war between the States, used it in the City Hospital where gangrene was prevalent. Dr. Dugas obtained the carbolic acid or the tar water from the pine tar, applying it in all these infections and wounds, and prevented the spread of gangrene. As a student of medicine, Hardman was taught by Dugas in Augusta Medical College. He declares that Dugas "is really the father of antiseptic surgery"; that he was the first to suggest laparotomy for gunshot wounds in the abdomen; and the first to use animal ligature—catgut—in the closing of wounds in the intestines, which he did in Wilkes County, Georgia, in 1856 or 1857. This catgut was a violin string taken from a fiddle at a party; the patient recovered. This incident is not mentioned in the biography of Dugas in *Appleton's Cyclopædia*. As a loyal Georgian, Governor Hardman says that he "suggests these thoughts that America, and especially Georgia, might be placed where they belong in their contribution to the relief and prevention of human suffering." In medicine and in surgery, as in other arts and sciences, establishment of precedence is sometimes difficult; the Doctor-Governor of Georgia is not dissuaded by difficulties from any essay at what he considers proper allotment of credit.—*The Sun*, New York, N. Y., Dec. 7, 1929.

Responsibility of the Public Health Nurse for Social Phases of Her Work*

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THE primary objective of public health nurses has evolved during the last 25 years from one concerned mainly with giving care to the sick poor, to that—commonly accepted today—concerned with attaining a maximum of health for all members of each family in the community.

Each year as science opens new ways of removing obstacles from the path of this objective it reconfirms the knowledge that health cannot be secured by caring for physical needs only, but is the result of many factors; that individuals cannot be viewed as entities unaffected by their environments; that physical health and mental attitudes have a direct relationship; that to treat effect intelligently one must search for the underlying cause, often obscure and elusive. Each year brings us to more forceful recognition of the close relationship between the so-called social and health problems of a family, and of the necessity of adjustment of the one if we would better the other.

As the public health nurse works in homes with families she further observes that these social problems which she uncovers fall mainly into two groups—minor maladjustments which if left uncared for may develop into serious social and health problems later; and acute major problems of an easily recognized pathological nature, often the result of lack of proper treatment in the past. The handling of these two groups differs, one calling for preventive, and the other for curative treatment. To facilitate clearer thinking, let us discuss each separately.

RELATION OF MINOR SOCIAL MALADJUSTMENTS TO THE WORK OF THE PUBLIC HEALTH NURSE

Almost every family, if studied, will be found to harbor problems of minor social maladjustment, many of which with time and under-

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standing will right themselves. Others, if left untreated, may develop with the years into acute social ills—such problems, for example, as arise out of wrong attitudes between husband and wife, parent and child, or the child and his playmates. The presence of a person with mental deficiency or mental disease in a family that does not understand the difficulty or know how to handle it may completely wreck that family's chance to attain normal health and a happy life. Bad housing, poor housekeeping, unwise expenditure of an adequate budget, are barriers that keep many a public health nurse from realizing her "primary objective" in countless families.

The father who is ill with tuberculosis will not quickly show much permanent improvement so long as he is deeply worried over family finances, nor can the public health nurse easily safeguard children whose tuberculous parent insists on returning home from the sanatorium for frequent and lengthy visits because he is lonesome. She is learning that it is a much more difficult task to give adequate prenatal supervision to the mother who is unhappy over the expected arrival of the new baby, than to the mother who is joyfully anticipating him, and that she has but begun to understand the significance of the relationship between mental attitudes and physical health during pregnancy. She sees that child hygiene is becoming more and more linked up with parental education; that, for example, wrong feeding habits of children are often corrected only after the mother gains a clearer understanding of her unconscious motives in pampering her child. Again, the underlying reasons and attitudes that result in the uncoöperative patient must be unearthed and understood before much of constructive good can be accomplished with him.

Because of this shift of emphasis in her program and her appreciation of the added responsibilities, the public health nurse has come to change her attitude toward these minor, or incipient, social and mental problems. She has always had these before her, but where formerly she felt that she could not give attention to them because they would take time from an already overloaded program, she now sees that it is impossible to do good health work until they are dealt with, and so, far from jeopardizing her primary objective, such adjustment has become a step toward its attainment.

With this change in point of view, and the increasing demands from the field, it is not strange that nursing education is having to change in an effort to fit the nurse better for the task which confronts her. A beginning is being attempted with student nurses in some of the schools of nursing, who are being taught through use of the case study method to care for their patients, not as isolated cases but as

individuals, part of family and community life, whose illnesses bear directly upon those groups and their adjustments to them. They are being taught that it is impossible to do good constructive health work unless at the same time they see and understand the many social implications of their patients' problems.

Postgraduate courses in public health nursing are requiring their students to take many courses that help to give this broader outlook —psychology, sociology, mental hygiene, methods of family case work, methods of teaching. Never for one moment do we think of turning our public health nurses into "social workers," but we do hope for the nurse with the quickened social conscience, the nurse who sees the full implications of the social and mental phases of her health work.

To meet the needs of the older nurses already in the field, organizations are arranging staff education programs which are constantly widening in scope. A few forward-looking agencies, realizing the need for extensive study of this whole problem, are employing trained mental hygiene workers experienced in case work methods as supervisory consultants to their field nurses, in an effort to see just how much the application of mental hygiene and case work principles will help the average public health nurse to handle her family situations more wisely.

Although these experiments are really just well under way, a good beginning has been made toward the development in the nurses of better attitudes, and easier approaches to the day's work, attempting to increase their understanding and intelligent sympathy, to strengthen their sense of relative values, and to refine their technics in working with families. Study of the work now being done will undoubtedly do much to shape future policies, and should create a most promising field for the specially trained mental hygiene case worker who likes to teach and to accomplish results in her families by working through the staff nurse.

RELATION OF MAJOR SOCIAL PROBLEMS TO THE PROGRAM OF THE PUBLIC HEALTH NURSE

In the course of her work, the public health nurse also meets many problems involving social maladjustments of individuals in her families of such an obviously acute nature as to leave no doubt that the need is for immediate, skilled treatment—the sudden decrease of family income through death or illness, the neglect or mistreatment of children, the need for boarding home care, the problems of illegitimacy, improper guardianship, delinquency, and so on. There can be

no question that it is the responsibility of the public health nurse to sense and evaluate these problems in the homes that she comes into contact with, recognizing that here the question of proper treatment is often closely tied up with that larger one of community resources.

What is the financial rating of the community? Can it provide specialized, trained workers to handle these acute problems? Does it provide them? If it does, then so far as the public health nurse is concerned, the matter is best resolved into one of securing increasingly better coöperation with the social agencies—coöperation which is built on mutual understanding, faith, good will, and a common desire to give the community the best quality of service possible. One public health nursing agency has found that the addition of a mental hygiene case work supervisor to the staff has done much to help the field nurse in referring these problems more intelligently, giving her a better understanding of the social worker's point of view and the difficulties under which she works, as well as a more specific knowledge of what she can fairly be expected to accomplish in a given time.

If no such workers are supported by the community at the time, is it due to financial inability or to ignorance? If the latter, again the public health nurse has an opportunity for public education, working through her board of directors and nursing committees. Countless communities throughout the United States owe the provision for increased social work facilities to the determination and leadership of public health nursing groups and lay groups spurred on by nurses of vision.

There are many rural areas that for years to come cannot afford more than one community worker—cut over timber lands that have to await the growth of new forests for return of prosperity; agricultural sections where banks have failed until almost none are left; regions where the total resources are too poor to support even the most meager of public schools without much federal aid. The health needs of these rural people are often more readily recognized by themselves than their social or mental ones, and the work of the public health nurse carries an appeal—through her service to children—that is often the first to be met. No matter what the need for trained social workers, it has to be admitted that probably in many of these communities they will not be employed out of local funds for several generations to come.

What is the public health nurse to do with these acute social problems?—leave them alone? Some do, and that this is entirely unsatisfactory from a community point of view is too obvious to need comment. Shall she try to solve them herself, adding them to an already

greatly overcrowded program? If she does, one of several things will happen: She may choose to work longer hours than any one human being should, and finally lose courage and leave. She may drop part of her health program to make way for these other very difficult duties, with the result that both health and social programs are poor in quality, but the best that she can give unaided. Some sections have tried this method as a state-wide policy, and after several years of observation have been forced to admit that from a public health nursing angle, at least, it has been unsuccessful—the quality of the health work accomplished has been so poor.

The public health nurse may train a group of lay people to study seriously these community and family needs, handling each problem as it arises as an individual community challenge. The first two methods have not been satisfactory from the community's point of view; this last is still so experimental that little definite advice can be given as how best to train such groups. Certainly the public health nurse needs help here, and we look for the time when travelling field advisers, perhaps mental hygiene workers trained in case work, will be supplied to the rural nurse by such agencies as bureaus of public health nursing of state boards of health, or the American Red Cross, to help in the training of these groups, and to give advice to her on the disposition of her concrete social problems. The whole question, as it relates to these poor rural areas, is one that needs much experimentation, scientifically done, honestly analyzed.

A few agencies, believing that they obtain a better quality of family and community service through use of the combination worker, are advocating the nurse-social worker, who carries all the social and health work done by the organization in her families, much as is being practiced in certain parts of Europe. One notable exponent of this is the New York Association for Improving the Condition of the Poor; but even here need is felt for more experimentation with certain phases of the work, before this organization is willing to recommend the practice unreservedly to others.

From them we hope in time for the answer to some of these questions:

What shall the family case load be for such field workers—smaller, of course, than that of either nurse or social worker who handles but a single phase of the family problems—but how small as a maximum?

What factors must enter into the determination of size of case load?

How shall such combination workers be trained, and where, so that they will be able to practice not only treatment but prevention?

What form shall staff education take to this end? How shall supervision be given, and by whom—an expert in each field, or a combination worker of long experience and complete education?

Is the nurse-social worker more or less expensive to the community, realizing the many factors—of education, supervision, and administration—which must be considered?

What are the concrete, specifically proven advantages to the family and the community of this type of worker over the other two specialists?

Even in such an organization as the A. I. C. P., we find certain phases of both social and health work done by specialists, so that the field workers are not carrying on completely generalized organization programs in all families. Why?

There is one last phase of the subject which will bear brief mention. That is the responsibility which the public health nurse is having thrust upon her in families that are economically self directing. In every community there are many such families who, when trouble comes, rarely think of turning to a specialized social agency for advice and help; but to them the friendly public health nurse has daily access, and to her sympathetic ears are recounted troubles of all sorts and sizes. She feels her obligation to advise as wisely as she can, calling for the assistance of specialists when they are available or necessary—but for years to come it is safe to prophesy that she will be the guide sought more and more by self directing, economically independent families, whose maladjustments and needs are often as acute as those found in the poorest tenement flat.

In conclusion, we can but repeat that this question—how the public health nurse handles the social phases of her health work—needs such careful study as to make experiments with it watched with keen interest by both nurse and social worker, here and abroad. It behooves us individually and as a profession to keep open minds, and to give every encouragement to groups who courageously step away from tradition to try out new methods, to develop new points of view. Let us only make sure, first, that our experiments are scientific in procedure, for opinions based on opinion only without substantiating scientifically collected facts are of too uncertain value to be of much use in guiding programs of work; and, most important of all, let us take care that in our zeal for research we do not forget that primary purpose to which all public health nursing is committed—giving increasingly better health service to families.

How To Tell What*

In Popular Health Instruction

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THIS title may sound like a barbarism, but there is reason behind it. For several years our section, particularly in its clinics, has devoted much time and effort to the consideration of the content of health education material. Basic rules have been formulated and presented as guides to the selection and evaluation of the data, which might profitably be incorporated in our educational program. Scientific accuracy, soundness of basic fact, appropriateness, pertinence, and the like have been stressed as the *sine qua non* of the material out of which our educational instruments must be fashioned. In direct presentation and through critical self testing we have listed, tried, and affirmed these norms. We have thus thoroughly considered the *content* of the "What" of health education.

These considerations constitute but the first principles in our complicated metier. That sound construction implies good building material, is a valid principle, but it neither defines the technic of construction, nor yet foreshadows the pattern of the ultimate product. It is this part of our problem that we designate by the "How" of our title. It is our aim in this paper to start where we left off a year ago, and advance to the consideration of a few basic principles in the technic of our art. I say "our art," because, as Routzahn stoutly insists, health education deals with science, but is not in itself a science. It is predominatingly an art, and art is that elusive something which does not lend itself to complete definition, nor can its essence be reduced to principles. Most of us can attest to this fact out of our own experiences. When confronted with a piece of health education material and asked for our judgment, we are like the amateur art critic who begins his critical remarks by the affirmation, "I know little about art, but I know what I like." An effort has been made to reduce this "knowing what we like" to principles.

In all, there seem to be but four cardinal principles to the technic of health education. The technic of a good salesman, when analyzed,

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resolves itself into four steps: first, he arouses curiosity, then enlists sympathy, gives information, and lastly, by a masterful stroke puts across his sales. These are also the four cardinal principles in the health attraction technic.

Health education material should first and foremost arouse curiosity. Living human beings are bodies in constant motion, following a course determined by antecedent propelling forces. If it is our desire to change the course of human movement to a new direction—toward health consciousness—in conformity with the well known principles formulated long ago by Newton, we must apply a new force to the body in such a way that the resultant of the initial and new force will deflect the moving body toward the desired end. For this there is no more effective agent at our command than curiosity. No thing so readily takes a man off his appointed task, or out of his determined path as curiosity. Watch a man as he walks the street, or a child as it plays. Seldom is the path as straight as the proverbial arrow, rather it zigzags, the point of deflection corresponding usually to where the stimulus, the force of curiosity, has produced a new resultant direction.

Our first step must therefore be to arouse curiosity, to force, if you please, a consciousness of our presence upon the selected subject. But—and this is the second principle—having aroused curiosity, and thereby having secured attention, we must now retain it. To achieve this we must enlist sympathy. A man may be walking, thinking of his stocks or bonds; he becomes aware of the beating of a drum; he turns his head in the direction of the sound and perceives a heretofore unnoticed crowd. His curiosity is aroused; he draws near and finds a revival meeting going on. Whether he remains to listen to the exhortations or goes on his way will depend on a variety of conditions, but in no small measure on whether his sympathy has been enlisted. Curiosity attracts, sympathy holds, and it would profit us to comply with these first two principles in the construction of our health education material.

Assuming we have achieved both; assuming that we have aroused curiosity and enlisted sympathy; what then? These first two steps are but means to ends. What are the ends? The ends of health education are instruction, and action. The third and fourth principles in our health education technic are, therefore, to impart information and to lead to action. These need no elaboration, they are self-evident; hence, we may recapitulate and say that four cardinal principles in health education technic are: (1) to arouse curiosity; (2) to enlist sympathy; (3) to impart information; and (4) to lead to action.

Having enumerated these principles we must consider in a more concrete manner how they may be applied. We must ask and find an answer on how to arouse curiosity, on how to enlist sympathy, as well as on how to impart information and lead to action. The first two of these we will consider in greater detail than the last, partly because they lend themselves to more ready generalization, and partly because they have been less commonly dwelt upon.

How is curiosity aroused? The answer is simple—by the extraordinary, by the novel, by the new. A man standing silently and operating a little machine into which at one end are fed slips of white paper that emerge from the other as dollar bills is a novel sight. He therefore attracts attention. An old proverb given a new twist is novel, and will attract attention. New color combinations, odd patterns, novel forms; these and like agents can be used to arouse curiosity, to attract attention. But, in arousing curiosity, one must not confuse the extraordinary with the sensational, nor the novel with the bizarre. Arousing curiosity is not an end in itself—carried to an extreme it tends to defeat the end which it should serve.

Having aroused curiosity it is our aim to retain attention, and this means enlisting sympathy. How is this to be achieved? The answer is to be found in the vital egocentricity of man. Under each and every circumstance man tends to interpret his environment, and everything new confronting him, in terms of himself and his own. Consciously or otherwise he asks of everything, does this concern me and mine, and if so, how? If it does concern him he is either sympathetic or antipathetic. If it does not concern him he is indifferent, his consciousness moves on to newer fields. If, therefore, we aim to enlist the sympathy of the person whose attention we have secured we must anticipate his question, "does this concern me?" and answer it convincingly in the affirmative.

Having achieved the foregoing we are in an advantageous position to secure the ends of health education, namely to impart information, and to lead to action. The former comprises a field intricate and extensive, and it is not vital to our consideration, or possible now to enter into it in a detailed manner. Its own technics are so multiform and so dependent on the nature of the information to be imparted and the conditions of those addressed, that even to attempt to consider them here would lead us far afield. Only this needs to be noted—that the novel and sympathetic manner of presenting facts will tend to make them more welcome and more appreciated. Our first two cardinal principles integrate with the third.

Finally, there remains to be considered the "How" of leading to

action. The key to this problem is the appeal to the emotions. We may instruct and convince by an appeal to the intellect, but the emotions seem the fountain source of action. Desire is primarily an emotion which, I grant you, most of us as thinking beings tend to rationalize. To achieve an action we must make the end desirable, which means we must emotionalize it, preferably with a pleasurable emotion, though sometimes of necessity with a painful one.

Commercial advertisers have appreciated these various items in the technic of education, and though we may not agree with their ends, we can profit by their methods. Witness for example how the advertiser attempts to sell his five-foot shelf of books. Does he content himself with a mere intellectual appeal on the value of culture? No, he emotionalizes his appeal by promising the purchaser of his commodity popularity with the fair sex, and a spellbinding faculty with the men.

The four cardinal principles in health education technic which we have listed might at first appear like so many water-tight compartments definitely separated from each other. It may be convenient for the purpose of exposition to present them in this fashion, but actually they are not so separate; on the contrary, they tend to integrate and fuse. That which arouses curiosity may at one and the same time enlist sympathy, or even instruction. For our technologic purposes, however, and for checking on our material it is worth our while to test our educational instruments for each of these desired qualities. Thus, when our preliminary work has been done and we have gathered together the material, the "What" of our health education, then it is up to us to attempt its organization in the manner outlined. The substance should be so manipulated that it will arouse curiosity, enlist interest, impart information and lead to action.

Needless to say it is not always possible to accomplish all of these four objectives in every piece of health education material. A poster for example may only arouse curiosity; a piece of literature may do the same, and in addition enlist sympathy, but if the individual piece may not achieve all four objectives certainly the totality of our program or campaign should accomplish this.

Pasteurized Dried Fruits*

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IN this paper it is desired merely to discuss briefly certain public health aspects of dried fruits. Tremendous quantities of dried fruits, such as raisins, dates, figs, prunes, peaches, apricots, and apples, are produced either in this country or are imported. They are liberally eaten and relished by people in every walk of life.

The basic principle of drying is the reduction of moisture to a point where microörganisms are unable to proliferate and cause spoilage. For most dried fruits, this moisture content critical point varies from 20 to 30 per cent according to the amount of soluble solids present in the fruit. Naturally the higher the concentration of sugar, the greater the moisture content that can be tolerated without spoilage.

Drying is carried on both by evaporation in the sun and dehydration in stack, kiln, or forced draught tunnels. The latter method is becoming more and more popular and actually produces higher yields of superior quality dried fruits. Rain damage, insect infestation, and spoilage are largely precluded when fruits are dehydrated.

In sun drying, the temperature of the fruit seldom exceeds 120° F. Dehydrated fruits reach temperatures of 160° to 180° F. To avoid case hardening, absolutely dry air is not used for dehydration, but rather air containing 20 to 40 per cent relative humidity. Dehydration processes ordinarily require from 8 to 36 hours for completion. Lye dipping for a few seconds to check the skins and hasten the evaporation of water is usually practiced. Sulphuring, that is, exposure of the fruit to fumes of sulphur dioxide to prevent discoloration, is also generally employed on apples, pears, peaches, apricots, and some kinds of grapes and figs. Normally, prunes are not sulphured. The sulphuring also protects the fruit against spoilage and, according to recent researches, serves also to conserve vitamin C.

Dried fruits are sold both in bulk and packed in retail sealed paper cartons or tins. The use of the sealed paper carton or tin for merchandizing dried fruit is growing rapidly. From a public health point of view sealed packages are to be preferred to open bulk containers.

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MICROÖRGANISMS ON DRIED FRUITS

Very limited studies have been reported. Prescott,[1,2,3] working largely with artificially dehydrated vegetables, found a varied microbial flora on dried peaches, tomatoes, bananas and vegetables. The numbers of bacteria varied from less than 100 to over 1,000,000 per gm., with an average of less than 10,000. The types were similar to those found on fresh fruits or in soil and water. Both spore and non-spore formers were isolated. No pathogens or toxicogenic bacteria were found. Saprophytic molds were nearly always present, usually as spores which evidently had survived all pretreatment and dehydration. He found that the numbers of microörganisms on dried foods gradually decreased during storage, providing the moisture content remained approximately constant. Several laboratory and plant tests using fresh vegetables and fruits artificially inoculated with *B. coli*, *B. paratyphosus* A and B, *B. enteritidis, B. suipestifer, B. typhosus*, *Cl. botulinum, Micrococcus pyogenes aureus* and *B. subtilis*, were made with "very reassuring" results. Although no typical pathogen was recovered from the vegetables or fruits after thorough dehydration, the data presented are rather vague and inconclusive.

Nichols[4] found no sample of dried fruit sterile, but many had only a few bacteria and molds. No pathogens were found. He calls attention to the possibility of contamination between the dryer and the consumer. Though too dry to grow, bacteria may not immediately die but remain dormant until more favorable conditions of moisture and temperature arrive.

Hunwicke and Grinling,[5] in England, traced an outbreak of severe colitis to French packaged dates. The causative organism is called *B. coli tropicalis*, the description practically paralleling that of *Escherichia coli*. Eleven samples of French and English packaged and bulk dates were examined bacteriologically with the result that intestinal coliform organisms were isolated from six. Strangely enough, none of the bulk date samples showed any intestinal bacteria. It was concluded that dates may readily be contaminated during the repacking process, and that the presence of coliform organisms on the surface of packed dates constitutes a serious public health problem.

EXPERIMENTAL WORK

Inasmuch as the findings of Hunwicke and Grinling in England demonstrated the possibility of disease transmission by dried fruits, certain bacteriological examinations were made in our laboratory of the dried fruits found in American markets. No active spoilage was noted in any sample.

Standard laboratory methods of the American Public Health Association were used. Ten-gram samples of the fruits were placed in 90 c.c. of distilled water in rectangular, rubber-stoppered dilution bottles, shaken, allowed to stand 1 hour, then violently agitated for 2 minutes. Nutrient agar plates incubated at 30° C. for 72 hours were used. Due to overgrowths of molds in some cases, mold counts were made after 48 hours. Some of the data are given in Table I.

TABLE I

MICROÖRGANISMS IN AMERICAN DRIED FRUITS AS PURCHASED

Description of dried fruit	No. of samples	Average moisture content	Bacteria per gm.	Molds per gm.	Yeasts per gm.	No. of samples contg. lactose fermenters
Dates, Iraq bulk	8	16.1	12,300	18,400	20	3
Dates, Iraq packaged	12	17.1	3,970	35,800	55	2
Dates, Iraq commercially pasturized	16	19.4	80	700	0	0
Dates, Iraq laboratory pasteurized	8	20.6	65	160	0	0
Dates, Calif. packaged	2	15.6	760	700	100	0
Dates, Calif. glass packed	2	44.0	320	0	0	0
Dates, French Algerian packaged	1	24.0	18,000	42,000	16,000	1
Figs, Smyrna packaged	2	9.6	420	20	3	0
Figs, Calif. packaged	2	15.1	210	200	10	0
Figs, Smyrna lab. pasteurized	2	19.8	20	10	0	0
Prunes, bulk	2	15.0	25	15	0	0
Prunes, packaged	2	16.3	15	6	0	1
Prunes, lab. pasteurized	1	20.6	0	2	0	0
Peaches, bulk sulphured	1	13.3	10	0	0	0
Peaches, packaged sulphured	1	15.1	6	0	0	0
Raisins, seedless	6	15.3	310	340	6	1
Raisins, seeded	2	17.1	40	90	0	0
Currants (grapes), packaged	2	17.3	95	105	0	0
Apricots, bulk sulphured	2	11.8	8	17	0	0
Apricots, packaged sulphured	2	13.9	20	0	0	0
Apples, bulk sulphured	2	21.9	40	10	10	0
Cranberries, packaged	1	6.0	0	3	0	0

Variations in numbers of microörganisms on dried fruits are very great. It is necessary to use the results obtained from several samples if reliance is to be placed on the data. The method of averaging counts as in Table I is subject to criticism. Some samples have no bacteria while others may have 100,000. Obviously it is not exactly fair to call the average count 50,000. Since it is impossible to print individual counts the method of averages is used.

The counts on raw dates are highest of any of the fruits, while sulphured fruits are lowest. Without doubt the length of storage largely determines the numbers of organisms present as Prescott and his coworkers[8] have demonstrated. It is therefore probable that

some of the samples examined harbored many more organisms after packing than the examination showed. On the other hand bulk dried fruits may readily pick up organisms by improper handling and storage. Of the 79 samples of dried fruits examined only 8 contained lactose fermenting bacteria. None was identified as *Escherichia coli* though several closely resembled *Aerobacter aerogenes*.

It is surprising that yeasts were not encountered more often. Sixty of the samples showed no yeasts—at least none developed on the nutrient agar used as a medium. This is contrary to the belief that yeasts are abundant on dried fruits. Anaerobes were present in somewhat over half of the samples but always in small numbers. Cocci, especially Sarcinae and Micrococci, were relatively abundant and second in numbers only to the spore-formers. The molds were all common saprophytes. Aspergillus was most numerous, with Penicillium second, and Mucor third. In many samples molds outnumbered the bacteria. The spores of the Aspergilli were relatively heat resistant. Some usually survived the pasteurization processes which destroyed all microbic vegetative forms and greatly reduced the number of bacterial spores.

Bulk dried fruits harbored more microörganisms than packaged. There is a strong tendency in the trade toward the package as opposed to bulk goods. The packers are simply catering to the public demand for a clean, wholesome, uniform product.

PASTEURIZATION

Preliminary experiments with dates, figs, raisins and prunes have demonstrated that these fruits may be heated to pasteurization temperatures without injuring their texture or flavor. The total numbers of organisms were greatly reduced. In the case of dates the average reduction varied from 93 to 99 + per cent; prunes and seedless raisins gave similar results; but figs were much more difficult to handle and gave somewhat inconsistent results.

In the case of dates, huge commercial continuous pasteurizers are now in use which handle several thousand cases daily. The process is varied for each type and variety of date but the results have been very encouraging and the process is effective not only in destroying a large percentage of the microörganisms present and thus insuring a safe food, but the appearance, texture and flavor are actually improved. The dates are treated in the retail paper carton and are not handled after the heat treatment.

Numerous laboratory experiments showed that temperatures of from 160 to 185° F. in the fruit at humidities of 70–100 held for from

30 to 90 minutes were effective for the different dried fruits. A usual preliminary or coming-up time of 10–30 minutes is necessary in addition. The moisture content of the original fruit, its size and texture affect the efficiency of the pasteurizing process. It is necessary to work out the individual and combined effects of these variables for the different fruits, and even varieties and grades of the same fruit. There is a slight increase in moisture content of all fruits treated by this method, varying from 1 to 5 per cent, depending upon the original moisture content as well as humidity. Forrest[5] has been granted a patent on a process designed to recondition prunes and figs which have dried out and sugared. He uses temperatures somewhat below 212° F. for varying exposures. We found that lower temperatures are efficient in pasteurizing the more acid fruits, because of their lower pH. For example, peaches, apricots and prunes can be treated at lower temperatures than figs or dates.

INOCULATION EXPERIMENTS

Only laboratory tests have been made. Dates, figs, raisins and prunes were coated with cultures (2 sources) of *Escherichia coli* and subjected to various pasteurization treatments. In all cases where the relative humidity was 75 per cent or more, a 30 minute-exposure to 160° F. was sufficient to destroy all the organisms. Approximately 40 of these tests were made. Using *Eberthella typhosum* on dates, a single experiment showed complete destruction of the organisms after exposure to 170° F. for 25 minutes, or 160° F. for 30 minutes, at a high (unmeasured) humidity. Since the colon bacillus is considered more resistant than the typhoid, the above findings are significant. In conducting heat treatment experiments care must be taken to keep up good air circulation, otherwise considerable variations in temperature occur in different parts of the pasteurizer. Wet steam forced into the air chamber by means of fine spray nozzles and thoroughly mixed by the use of electric fans, was the method of regulating humidity. Humidity was calculated by means of recording thermometers, giving both dry- and wet-bulb readings.

STORAGE TESTS

A few storage tests were conducted wherein cartons of dates, prunes, raisins and figs were liberally inoculated with *Escherichia coli* and stored at laboratory temperatures until the organisms had died out. Though the results were variable the colon bacillus always died out on prunes in 15 days; and on raisins, dates and figs in 30 days. Prescott, Nichols and Powers[3] had previously pointed out that the

bacterial count in dried vegetables gradually decreases during storage, providing the moisture is under 10 per cent. Molds remain more nearly constant. There is no doubt that the bacterial and yeast counts of dried fruits which have undergone long storage will be low.

CONTROL OF DEHYDRATED FOODS

Prescott[2] and the *U. S. Army Quartermaster Regulations* sum up the situation as follows:

> After dehydration, fruits and vegetables should be packed at once in suitable tight receptacles or stored in bins which have been specially prepared and which have adequate protection against vermin, insects, molds and other microbic enemies. Such storage receptacles or containers should prevent access of moisture in sufficient amounts to render the food material capable of fermentation or decomposition. The methods of handling the finished product in the factory should be such as to preclude infection of any sort. Care should be taken to impress upon the manufacturer that he is dealing with a food material and that it is essential to the welfare of the consuming public that such food materials should be placed before the consumer in a wholesome and uninfected condition.

Since many of our dried fruits are not dehydrated but merely sun dried, and all are often handled or exposed to infection during repacking or storage, in addition to the above recommendations, at least in the case of some dried fruits, a final heat treatment or pasteurization in the carton should greatly aid in insuring a safe and satisfactory product.

SUMMARY

Dried fruits harbor considerable numbers of molds and bacteria and also a few yeasts. It is desirable to protect the public against bacterial infection from these foods. At least one such outbreak has been reported.

Dried fruits such as dates, raisins, figs, apricots and prunes may be pasteurized in paper cartons with moist heat at controlled temperatures and humidities. In general, different treatments are required for each fruit and often each variety must be handled a little differently. Temperatures which have been found effective in greatly reducing the total numbers of microörganisms on dried fruits at humidities of 70–100 per cent vary from 150° to 185° F. for 30 to 70 minutes. *Escherichia coli* and *Eberthella typhosum* were destroyed in every case where the temperature of the fruit remained at 160° F. or above for 30 minutes at relative humidities of 75 per cent or more.

Commercial processes for the effective pasteurization of dates, figs and raisins are now being developed or used.

Sulphured fruits harbor very few organisms because of the inimical

effect of the sulphur dioxide. Acid fruits are more easily pasteurized than those of higher pH.

From a public health viewpoint, pasteurization marks a definite advance in the merchandising of dried fruits.

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National Better Business Bureau

THE National Better Business Bureau, with headquarters in New York, and the various affiliated Better Business Bureaus scattered over the country have for some time been doing excellent educational work in giving editors and publishers the facts regarding schemes that are operated to the detriment of the public. Naturally, the medical field comes in for its share. Physicians may be interested in knowing that not a day passes but the Bureau of Investigation of the American Medical Association receives requests either from the National Better Business Bureau or from some of the affiliated Better Business Bureaus asking for information on certain medical schemes that seem open to suspicion. More than 600 such letters have been received and answered so far this year.

The Better Business Bureaus are primarily interested in "Truth in Advertising." Knowing that every false, misleading or fraudulent advertisement in any field tends eventually to break down public confidence in all advertising, the Better Business Bureaus—which are an outgrowth of the International Advertising Association, previously known as the Associated Advertising Clubs of the World—have been, and are, carrying on a campaign for truthful advertising that redounds not only to the credit of advertising in general but, in the medical field at least, also operates in the interest of public health.—*J. A. M. A.*, Nov. 9, 1929.

EDITORIAL SECTION

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THE USE OF IRRADIATED FOODS

NO subject has so occupied the attention of the medical world in recent years as Steenbock's discovery that exposure of food to ultra-violet rays imparts to it antirachitic properties. Following this discovery, further observations showed that the substance in food responsible for this remarkable effect is ergosterol, which although inert in itself becomes activated when irradiated. Just what change occurs in the ergosterol as a result of this exposure is still unknown.

The antirachitic potency of activated ergosterol (the antirachitic vitamin) is tremendous. Previous to its discovery, cod liver oil was the most concentrated source of the antirachitic vitamin known. Now it has been shown that 1 ounce of activated ergosterol has the same antirachitic effect as 2 to 6 tons of cod liver oil. It is evident that we have at our disposal in irradiated ergosterol a most potent therapeutic agent.

The mode of action of activated ergosterol in the body is not known. It is necessary, however, for the absorption and utilization of calcium and phosphorus from the gastrointestinal tract, for without activated ergosterol the lime salts are not absorbed and deposited in growing bones. In short, activated ergosterol makes substances already present in the food available for the body. There are probably other essential phases of the body metabolism which are dependent on the presence of this substance.

Rickets is a disease chiefly of the first 2 years of life. During this time milk is the most important article of food. The amount of activated ergosterol normally present in milk is so small, particularly during the winter months, that for all practical purposes it should be

regarded as being devoid of this necessary substance, which means that it is essential for every infant and child to receive some substance containing activated ergosterol at least during the winter months. The same holds true for the older child and adult.

It is essential for the physician to have some idea of the amount of activated ergosterol necessary for protection against rickets. From extensive clinical experience it has been found that 3 or 4 teaspoonfuls (about 15 gm.) of good cod liver oil daily is sufficient to protect an infant. The equivalent amount of ergosterol is about 0.2 mg., which is 2,000 times the amount necessary to protect a rat, or 2,000 rat units. It must be understood, however, that the potency of different samples of irradiated ergosterol may vary tremendously, and it is therefore impossible to use the weight of ergosterol as a unit of measurement.

Commercial firms are now beginning to market irradiated food. At present we have little idea as to their antirachitic potency. We may use an irradiated food in the belief that it has enough antirachitic effect to prevent rickets when in reality there is present only one-fifth or one-tenth the required amount. On the other hand we may be giving an overdose with resultant harmful effects. The solution of the difficulty lies in a statement by the manufacturer of the food in question as to the number of units of activated ergosterol present in a given amount. When we realize that 2,000 units is the average daily amount of the substance necessary to protect an infant, we can tell whether the particular irradiated food exerts only a slight antirachitic effect or may be used as the sole source of the vitamin.

The whole question of the use of irradiated foods must be approached with an open mind. It is not impossible that irradiated foods which produce only a slight antirachitic effect in infants, and none in the older child or adult, may still produce other beneficial effects of which we know nothing. The evidence at hand indicates that in irradiated foods we have a most valuable therapeutic agent. However, our practical knowledge of their effect on human beings is still so meager that one hesitates to predict just what place they will play in nutrition.

SHOULD CERTIFIED MILK BE PASTEURIZED?

A STATEMENT in this JOURNAL, July, 1929, page 784, in which certified milk was excepted from the advice urging pasteurization of all market milk, has brought some protests and some inquiries to the Editor.

According to good authority, the most recent statistics show that

over 50 per cent of the milk supply of the United States is not pasteurized, and much of this belongs to the lower grades. This is, of course, an argument for universal pasteurization, but it also shows that the protests against unpasteurized certified milk are somewhat premature or misplaced energy. Values in public health should always be borne in mind. Is it not better public health practice to urge and teach the pasteurization of the lower grades of milk, than to spend time criticising the non-pasteurization of the highest grade produced?

It is also said that much certified milk is not produced according to the best methods. This may be partly true, but considerable experience in the examination of certified farms, and studying the production of certified milk, as well as the statements of others better qualified, justify the belief that practically all certified milk is of high grade. It is recognized, of course, that accidents happen in certified dairies, and that employees may occasionally infect the milk through being carriers, or on account of acute illness.

The discovery of the transmission of undulant fever to human beings through milk has led to a greater demand for pasteurization, and correctly so. The certified milk producers have not been blind to the situation. Of the 181 farms putting out certified milk, over 100 have reported on blood agglutination tests. More than 85 per cent of the animals are negative, with 5 per cent classed as suspicious, and 10 per cent as definitely positive. This work is proceeding rapidly, and those responsible for it have shown commendable energy.

One study known to the writer extending over a period of more than three years, and including upward of 50,000 tests on human beings, has shown only 5 positive cases of infection.

McAlpine and Mickle[1] have reported on 20,259 agglutination tests on human bloods, with 0.6 per cent of positive reactions. In their latest series, 25 per cent of those giving a positive reaction showed symptoms which were possibly attributable to undulant fever.

While we advocate pasteurization, and have advocated it for many years, we still believe that raw certified milk is as good or better than a poorly pasteurized product, or one which has received proper treatment, but careless after-handling. In this connection it might be stated that the term pasteurization should not be qualified. If the treatment is not properly carried out, it is not pasteurization, and the process should not be blamed, as it often is, for the faults which lie in apparatus or in operation.

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X-RAYS AND THE PUBLIC HEALTH

IN the December issue of the JOURNAL, page 1349, under this same title, we published an editorial calling attention to the early diagnosis of tuberculosis by means of the X-ray, and asking if some progressive health department would not employ a radiologist with efficient apparatus to which patients unable to pay for such service could be referred.

It is extremely gratifying to know that New York City, under the leadership of its efficient health officer, Shirley W. Wynne, M.D., has begun such a service. Indeed it has been in operation for some 6 months. That such a need existed is shown by the fact that it has already been found necessary to increase the number of days on which the diagnostic stations are operated, and so great is the demand that one has been recently established in Brooklyn, and two additional stations will be opened shortly in New York.

Patients are received only when they are referred by a physician, to whom a written report is made. In no case are the results of the examination given directly to the patient. Further, the stations do not accept patients for treatment, but will assist the physician to whom they are giving this diagnostic aid in placing a patient in an institution, either public or private, full information concerning which is available.

It is a pleasure to acknowledge the leadership of New York in this manner, and we can only hope that the good example of that city will be widely followed.

INCREASE IN MALARIA

FOR the past two years there has been a greatly increased incidence of malaria in the United States. In many sections which have been regarded as free from the disease for 20 to 30 years, numbers of cases have been reported, many of them confirmed by microscopic examination. For example, in Atlanta, which has been regarded as nonmalarious for at least 25 years, there were approximately 60 cases in the summer and fall of 1929, some diagnosticated clinically, and others by the microscope. Illinois has reported cases in a number of towns in the interior of the state which have been for a number of years considered free. In many states there is distinct evidence that malaria is spreading northward.

The number of cases of the disease in endemic areas has also increased. All this is in marked contrast to the former decrease observed even in areas in which there was high anopheles prevalence

Since 1926, malaria has unquestionably been on the increase, for reasons which are not entirely clear. "During 1929, it is said to have become of importance in several areas hitherto considered malaria free."

The State Board of Health of Illinois in commenting upon the conditions in that state a short time ago attributed the increase to the use of the automobile. In the opinion of epidemiologists, medical men and engineers of the Office of Malaria Investigations of the U. S. Public Health Service, there has been no such radical change or increase in automobile travel as to account for the sudden rise in the malaria rate, and in some cases, as between Florida and the North, there has been a distinct decrease since the collapse of the boom in that state. Unquestionably there is greater opportunity for infection among those who camp out along the main routes of travel, and even those in the hotter sections who take evening drives, but there seems no justification for concluding that such travel, which has shown no radical changes in the last three or four years, can be responsible for the sudden increase in the prevalence of malaria.

There are other explanations, none of which seem to account for all of the facts. The spring of 1929 was unusually wet, and some believe that this led to a great increase in the numbers of anopheles. A possible change in the virulence of the malaria parasites has been suggested, while still others hold that unknown factors are responsible for the recrudescence of the disease. Certainly here is a field for careful epidemiological and laboratory work.

That it is possible to reduce the incidence of malaria to the vanishing point even in badly infected areas was shown during the World War in a number of camps in the South. We know the intermediate host and the method of transmission, factors which usually enable us to control a disease. However, the death rate from malaria is comparatively low, and the human factor, which is always the most difficult to deal with, comes into play. The late Dr. Carter, who knew as much about malaria as any man in the world, once said in this connection, that he knew what he could do by draining, ditching, oiling, and brushing, and with such materials as cement and timber, but he did not know what he could do with human beings.

If malaria were a more deadly disease, it can hardly be doubted that our control of it would be easier. On the other hand, it must be recognized that there are still factors which are not well understood, and over which, in consequence, we do not have much power.

DR. FREDERICK MONTIZAMBERT

February 3, 1843 — January 2, 1930

THE long career of a distinguished public servant ended January 2 in the death at Ottawa in his 87th year, of Frederick Montizambert, C.M.G., I.S.O., M.D., F.R.C.S.E., D.C.L.

For upward of half a century (1865–1920) previous to the formation of the Department of Health at Ottawa, the public health work of Canada was carried on almost single-handed by the Director-General. Under his direction the quarantine and Marine Hospital services and laboratories of both coasts and at Grosse Ile in the St. Lawrence were developed. The fine commanding figure of this courtly gentleman, towering head and shoulders above his fellows, has been conspicuous at the public health gatherings of North America since their earliest days. He had been president of both the American and Canadian Public Health Associations, and to his energy and ability much of the public health progress on this continent must be ascribed. Dr. Montizambert was elected to the Presidency of the A. P. H. A. at Charleston, S. C., December 19, 1890, and presided at the Nineteenth Annual Meeting in Kansas City in 1891. He was an Honorary Fellow of the Association.

The younger generation of public health men owe much to the fine public spirit, the wise counsel and the friendship of Dr. Montizambert. He is a notable example of the public servant seen all over the British Empire, whose greatest regard is commonly to be found, at the end of his career, in a sense of duty well done.

Present at the birth of the public work of Canada, Dr. Montizambert witnessed the ravages of typhus, of which he himself was a victim, and of cholera

among the early immigrants. He saw the evolution of the work of preventive medicine, from the mists of empiricism to the scientific atmosphere of the present; he observed the advance of curative medicine and surgery from a similar empiricism to their erection on a scientific basis. But what one best remembers are his kindly qualities, his genial smile, his fervent handgrasp, and his "God bless you, my dear boy!"

LETTERS TO THE EDITOR

TO THE EDITOR:

Relative to a recent editorial in the December, 1929, issue of the JOURNAL entitled "X-Rays and the Public Health," the question is asked, "Will not some progressive health department install a radiologist and invite the practitioners of its constituency to send all their patients suspected of tuberculosis and all contacts of an active open phthisis for X-ray and expert interpretation, whenever the financial status makes it impossible for this aid to be privately obtained?"

I desire to record that the Los Angeles County Health Department has been engaged in just such a campaign since March, 1929. We have a full-time radiologist, who is an expert in chest diagnosis, with two full-time assistant technicians. The latest X-ray equipment is installed at several of our major health centers located in strategic points in the county. Free diagnostic consultations are offered to the medical profession in all cases unable to pay privately for such service, and whenever recommended by the family physician. A campaign among children of high school age was carried out during the months of April, May, and June. A total of 197 selected contact children and those underweight were X-rayed with the following results: 2 cases of pulmonary tuberculosis, adult type, were found, and 11 juvenile cases of tracheo-bronchial glands.

A special summer health school for contact children is maintained each summer, and 78 of these children were radiographed. Of these 78, 48 showed tracheal bronchial tuberculosis. Seven showed the adult type of the disease and 8 showed evidence of both. This work has proved very popular with the medical profession and we expect to push the campaign vigorously during the coming year. Let it not, therefore, be said that this field of work is overlooked by all health departments in this country.

J. L. POMEROY, M.D.,
Los Angeles County Health Officer.
December 19, 1929

TO THE EDITOR:

In October, 1927, I had the honour and pleasure of saying a few words about the German Hygiene Museum, Dresden, and its activities at the Annual Meeting of the American Public Health Association in Cincinnati, O. Since that time the Museum has constructed a new building for its educational purposes, and this new building will be opened in May, 1930. The exhibits to be shown there will make part of a great International Hygiene and Public Health Exhibition, which undoubtedly will be visited by everyone interested in both these matters present in Europe at the time of the Exhibition.

The idea of the first International Hygiene Exhibition, held in Dresden in 1911, and its initiator, Karl August Lingner, was to open new ways to health education which at that time was rather a new and little explored field. Since then, the Hygiene Museum tries to spread knowledge of the human body and its functions, about sicknesses and the methods of fighting them, about child hygiene and nutrition, etc., all over the world through greater or smaller exhibitions, and through furnishing educational material—almost to the

whole of Europe and even farther. The Exhibition of 1930, including the new displays of the Museum itself, is going to be as important as that of 1911 was, as many Americans, and especially readers of the *American Journal of Public Health*, will remember.

The different parts of it will be:

I. The scientific exhibit of the Museum itself in the new building.

(a) *The Man*—This exhibit has been remoulded totally for 1930. All that will be shown here in 1930—pictures, plastic models, movable models and arrangements to be worked by the public—will be new and quite different from the ancient routine work. Besides the "Transparent Man"—a special way of showing the parts of the human body like tissues under a microscope, of which I could also show some specimens in Cincinnati—another new method will make visible the character of the human body as a scientific and artistic masterpiece of nature.

(b) *Heredity and Eugenics* (Race Hygiene)—These are more modern branches of biology and hygiene, and the group, although shown already in 1911 in its first beginning, is almost totally a new thing.

(c) *Mother and Wife*—This group treats especially of woman's task in reproducing the human race, and of her preparations for this purpose. Her peculiarities as to this special accomplishment are shown, while her position in trade and profession is shown elsewhere in the exhibition.

(d) *Nutrition*—Anatomy of the digestive tract, metabolism, nutritional needs, including the economical problem, vitamins.

(e) *Health and Sickness*—Private and public prevention of disease.

(f) *Health Education*—Pictures, posters, pamphlets, lantern slides, moving pictures, theatre, etc.

(g) *History and Ethnography of Hygiene and Public Health.*

II. The scientific exhibits in the exhibition buildings besides the new Museum building.

(a) *General Care for the Body*—Work and rest, physical culture, care for the skin, the hair, the teeth, bathing, etc.

(b) *Women in Trade and Profession as well as in the Household*—An addition to the above mentioned group, dealing with the biological tasks of woman.

(c) *The Child*—Its development from birth, its feeding and education. Puberty, and its physical and psychical difficulties. Peculiar hygiene of the different age groups.

(d) *Physical Training*—Gymnastics, sports, plays. Anatomy, physiology, hygiene, methods of them.

(e) *Industrial Hygiene.*

(f) *The Human Mind and Mental Hygiene*—Already in 1911 it was realized that in addition to teaching biology of the human *body* also education about the human *mind* and its psychology is needed. A connecting link between physical and mental conditions of man is the intention of preventing both of them from becoming sick and therefore less efficient.

(g) *Food and Agriculture.*

(h) *Clothing.*

(i) *Housing.*

(k) *Disinfection.*

(l) *Separate Exhibit*—The Hospital.

III. Exhibits made through the national government, state, provincial, city and county governments; through insurance offices, through private health and hygiene associations, dealing with organization of hygiene and public health work.

IV. Exhibits made through foreign states and the Hygiene Section of the League of Nations.

V. Industrial Exposition.

Please use this letter in any form which seems suitable to you, when you find it might be of some interest for your readers.

Very sincerely,

DR. FELIX TIETZE.

Vienna, Austria
December 8, 1929

TO THE EDITOR:

We have heard overseas postgraduates complain that London is so large, and so complicated, that it takes a few weeks to learn the way around; they also say that, unless they come armed with letters of introduction to physicians or surgeons, it is difficult to obtain the facilities they require. The Fellowship of Medicine was founded to overcome these difficulties, and overseas postgraduates should, as a matter of course, come direct to the Fellowship where, without any charge, they can obtain information, advice and assistance.

We can—and every day do—save time for overseas postgraduates who ap-

ply to us either before leaving their own country or on arrival in England.

Perhaps the main point to be realised is that in England the Medical Year begins in October, and extends through the Winter and Spring until the end of July; August and September being the vacation months, opportunities for work are naturally somewhat curtailed, though the Fellowship endeavours to provide facilities for doctors who are only free for study during that time. We would add, however, that for overseas doctors their arrival in England in August or September means that they will have ample time to settle down and become acquainted with London before starting work in earnest.

We have been told that the information chiefly desired by overseas practitioners is the dates of the various examinations for degrees and diplomas, and the dates, duration and opportunities for securing resident positions in London hospitals, as well as the facilities for Special Courses of instruction. All this information the Fellowship of Medicine is in a position to provide.

As far as the Fellowship itself is concerned, opportunities for clinical work all the year round are provided in the 40 London hospitals with which it is associated, as well as the Special Courses,* and also weekly (free) lectures during the Winter months, and weekly (free) clinical demonstrations (except during August and September). In addition, the Fellowship publishes monthly the *Post Graduate Medical Journal* containing postgraduate lectures, clinical demonstrations, reports of cases, and information on the various courses of instruction. Above all, however, the Fellowship endeavours to help in every way possible medical practitioners requiring advice and assistance, by acting as a central bureau of information, and, of course, no charge is made for this service.

All enquiries should be addressed to the Secretary, Fellowship of Medicine, 1, Wimpole Street, London, W. 1.

Yours faithfully,

H. W. CARSON,

Chairman of Executive Committee

LONDON,

September 12, 1929

* Pamphlets available 1 Wimpole St., London, W. 1

A. P. H. A. Fifty-Ninth Annual Meeting

Fort Worth, Texas, October 27–31, 1930

Headquarters, Hotel Texas

ASSOCIATION NEWS

STANDING COMMITTEES OF THE ASSOCIATION

THE Executive Board of the Association met in New York on November 16–17 and on December 6. John A. Ferrell, M.D., was designated by the Board as Chairman of the Nominating Committee, and the other members of the committee, one from each Section, were confirmed as follows:

George H. Bigelow, M.D.—Health Officers
Roger G. Perkins, M.D.—Laboratory
George H. Van Buren—Vital Statistics
William H. Dittoe—Public Health Engineering
Henry Field Smyth, M.D.—Industrial Hygiene
James A. Tobey, Dr.P.H.—Food, Drugs and Nutrition
LeRoy A. Wilkes, M.D.—Child Hygiene
Ray H. Everett—Public Health Education
Sophie C. Nelson, R.N.—Public Health Nursing
John J. McShane, M.D.—Epidemiology

With respect to the four standing committees created under the new By-laws, the Chairman of the Board announced that Sally Lucas Jean had agreed to accept the chairmanship of the *Committee on Fellowship and Membership*, and the following additional members of the committee were confirmed:

George C. Ruhland, M.D.—Health Officers
B. L. Arms, M.D.—Laboratory
Louis I. Dublin, Ph.D.—Vital Statistics
E. L. Filby—Public Health Engineering
V. S. Cheney, M.D.—Industrial Hygiene
F. C. Blanck, Ph.D.—Food, Drugs and Nutrition
J. H. Mason Knox, M.D.—Child Hygiene
H. E. Kleinschmidt, M.D.—Public Health Education
Alta E. Dines, R.N.—Public Health Nursing
John A. Ferrell, M.D.—Epidemiology

Similarly, the Chairman announced that Abel Wolman had accepted the appointment as Chairman of the *Committee on Meetings and Publications*. Additional members are:

Charles F. Wilinsky, M.D.
John E. Monger, M.D.
M. P. Ravenel, M.D.
W. P. Shepard, M.D.

The appointment of members of the *Committee on Administrative Practice* was confirmed by the Board as follows:

C.-E. A. Winslow, Dr.P.H., *Chairman*
Haven Emerson, M.D.
Louis I. Dublin, Ph.D.
George C. Ruhland, M.D.
Henry F. Vaughan, D.P.H.
Allen W. Freeman, M.D.
Charles V. Chapin, M.D.
Sophie C. Nelson, R.N.
George T. Palmer, Dr.P.H.
Michael M. Davis, Ph.D.
W. S. Rankin, M.D.
George D. Lummis, M.D.
W. F. Draper, M.D.
E. L. Bishop, M.D.
John L. Rice, M.D.
} Officers of Health Officers Section

The organization of the *Committee on Research and Standards* was deferred until the next meeting of the Board.

Meetings of the three standing committees organized have been held. Subcommittees are as follows:

Committee on Fellowship and Membership
Sub-committee on Eligibility
Sub-committee on Membership Promotion
Sub-committee on Affiliated Societies
Sub-committee on Sustaining Membership

Committee on Meetings and Publications
Journal Editorial Sub-committee
Sub-committee on Annual Meeting Program
Sub-committee on Journal Advertising and Annual Meeting Exhibits

Committee on Administrative Practice
Sub-committee on Record Forms
Sub-committee on Rural Health Work

Sub-committee on Appraisal of City Health Work
Sub-committee on Appraisal of State Health Work
Sub-committee on Organized Care of the Sick
Sub-committee on Manual of Administration
Sub-committee on City Health Department Reports
Sub-committee on Public Health Nursing
Sub-committee on Health Conservation Contest
Sub-committee on Revision of Community Health Organization Plans
Sub-committee on Evaluation of Health Activities

Dr. Walker has been appointed Secretary of the Committee on Administrative Practice and Willimina M. Rayne Secretary of the Committee on Meetings and Publications. Cornelia Lyne was added to the staff of the Association on January 1, to become Secretary of the Committee on Fellowship and Membership. The organization of the work of the Association under these three main divisions is now under way.

The date for the Fort Worth meeting was definitely selected for the week of October 27.

A list of all Association committees was reviewed by the Executive Board, and it was voted to continue the *Committee on Training and Personnel* until such time as the *Committee on Research and Standards* would be organized, when it was to be transferred to become a sub-committee of that committee. Similarly the committees appointed by the sections were confirmed pending the further study of their activities and the development of a plan to coördinate their work as far as possible with the work of the appropriate standing committees of the Association. The Committee on Cancer, Committee on Dairy Products, Committee on Ventilation and Committee on Sanitary Standards and Practices in Schools were not continued, but their records, reports and interests were transferred to the Committee on Research and Standards.

The appointment of representatives to the National Health Council was made as follows:

Lee K. Frankel, Ph.D.
C.-E. A. Winslow, Dr.P.H.
Homer N. Calver

MEETING OF THE ASSOCIATION IN SALT LAKE CITY

There will be a regional meeting of the A. P. H. A. in Salt Lake City, Utah, May 26–28, 1930. The purpose of this meeting is to foster acquaintance and coöperation between persons engaged in public health work west of the Mississippi, and to discuss problems of particular importance in the West. William C. Hassler, M.D., Health Officer of San Francisco, Calif., will preside.

The first scientific session will be given over to a discussion of Rocky Mountain spotted fever by representatives of the U. S. Public Health Service Laboratory at Hamilton, Mont.; the recent outbreak of epidemic intestinal infection resembling typhoid, prevalent last summer in Yellowstone Park and throughout the Plateau Region. A. C. Reed, M.D., Director, Pacific Institute of Tropical Medicine, Hooper Foundation, University of California, will discuss the aims and importance of this Institute. A series of human cases of undulant fever which have been traced to the milk supply will be presented by a member of the Los Angeles County Health Department and the discussion of undulant fever opened by Karl F. Meyer, M.D., Director, Hooper Foundation for Medical Research.

The second scientific session will consist of a symposium on epidemic meningitis. E. C. Dickson, M.D., Professor of Public Health, Stanford Medical School, will discuss bacteriology and serology of meningococcus.

Karl F. Meyer, M.D., Director,

Hooper Foundation, will discuss epidemiology of meningitis. The source and incidence of the 1928 western outbreak will be discussed by J. C. Perry, M.D., Senior Surgeon in Charge, U. S. Public Health Service, San Francisco. Oriental importation will be discussed briefly in turn, by the health officers of the Pacific ports. Intermountain incidence will be discussed by the city and state health officers of the intermountain states.

The third scientific session will be devoted to a school health program, and will include discussions of the influence of university education on public health consciousness; school dental hygiene by Guy S. Millberry, D.D.S., Dean, College of Dentistry, University of California, San Francisco, and a paper on nutrition and dental caries.

The fourth scientific session will be devoted to a symposium on the sanitary aspects of the proposed Boulder Dam, including a discussion of engineering, immigration, and waste and sewage disposal in the construction camps. These subjects will be discussed by local authorities.

The final scientific session will include a discussion of the tuberculosis problem as related to the West, public health training for western health officers, by J. C. Geiger, M.D., Hooper Foundation, discussed by Dr. Paul Covington, of the Rockefeller Institute, and finally, a paper on the relationship of health departments to industrial hygiene.

Two public meetings will be held, presided over by P. H. Kirkley, M.D., of Utah State Medical Society. One of these will present Langley Porter, M.D., Dean, Medical School, University of California, who will discuss the public and the doctor. The other public meeting will present a discussion of What the People Buy for Their Public Health Dollar.

The members of the sub-committee in charge of program and arrangements for the Salt Lake meeting are:

Guy S. Millberry, D.D.S.
Walter Brown, M.D.
Adelaide Brown, M.D.
John J. Sippy, M.D.
Karl F. Meyer, M.D.
E. C. Dickson, M.D.
William C. Hassler, M.D.
W. P. Shepard, M.D.

The committee on local arrangements is under T. B. Beatty, M.D.

A. P. H. A. BADGES

A collection is being made of badges used at the Annual Meetings of the Association. This is being assembled for permanent display in the Administrative Office of the Association. The collection is as yet very small and it is hoped there may be members who have old badges who will be willing to contribute to this collection. If so, they may be sent to the Executive Secretary, American Public Health Association, 370 Seventh Avenue, New York, N. Y. The years missing are: 1922, 1920, 1916, 1913 and years previous, with the exception of 1891.

CORRECTION

On page 58 of the January, 1930, issue of the JOURNAL, in a Letter to the Editor, the last formula should read

$$\frac{90 \times .95 + 80 \times .05 + 80 \times .05}{2} = 46.75$$

C. A. ABELE

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

Conquering Diphtheria—The Philadelphia Department of Public Health in *Healthfax* for November 11, 1929, reports approximately 70,000 children immunized during the recent campaign under the direct supervision of the Department of Public Health. Up to that date there had occurred 828 cases of diphtheria during the year 1929 as compared to 1,731 cases for the same period in 1928, a reduction of 52 per cent in the morbidity total.

In the November 2d *Weekly Bulletin* of the New York City Health Department it is reported that during the first 9 months of 1929 there were 107 deaths of diphtheria and 1,406 cases less than the average for the corresponding period of the previous 6 years. During the first 9 months of the year, 165,000 children were immunized with toxin-antitoxin.

Diphtheria Prevention in Yonkers—E. G. Littell, M.D., Medical Director for the Board of Education at Yonkers, reports upon an interesting and successful endeavor to stimulate the school principals toward securing the immunization of pupils. In Yonkers there is a great deal of rivalry among the school principals and nurses, and it takes but a suggestion to spur them to action. Recently when School No. 20 was first on the list with 96.4 per cent immunized, and School No. 9 was second with 96.2 per cent protected, the principal of the former school remarked that his lead was altogether too slight and he therefore renewed his effort to secure the immunization of the 26 remaining pupils. Two of these received toxin-antitoxin from their own physicians; in 5 instances the principal asked permission to take the pupils to a clinic in another school. He was therefore able to raise the percentage of immunized children to 97.3, thus putting his school far in the lead. This school is composed chiefly of children of foreign born parentage.

Influenza Incidence—During the epidemic of influenza which swept through the United States during the winter of 1928–1929 an incidence survey was made in the towns of Brewster and Eastham, Mass., located on Cape Cod. A special study was made of the more important epidemiological factors involved in the spread of the disease and also of the outstanding clinical features.

The disease followed the common routes of travel. It was found that personal contact could be held accountable as a means of transmission in approximately 86 to 88 per cent of cases. The total incidence of influenza in Brewster was 33 per cent and 18 in Eastham. The incidence was higher among children, particularly those of school age, than among adults. The family incidence in Brewster was 45.2 per cent; in Eastham 26.9 per cent.

In an effort to determine the source of infection it was found that intimate contact with a clinical case could be established in most instances, and the incubation period was from 2 to 3 days, although the extremes varied from 1 to 10 days. The acute symptoms lasted from 2 to 4 days. Although there were many complications, the most common being pneumonia and otitis media, in the main the disease was uniformly mild and the fatality rate, even in those complicated with pneumonia, low.—S. B. Krames, *J. Prev. Med.*, 3: 433 (Nov.), 1929.

LABORATORY

C. C. YOUNG, D. P. H.

CONVENIENT PLATINUM NEEDLE

C. S. MUDGE, F. A. P. H. A.

Associate Professor Dairy Bacteriology, Dairy Industry Division, University of California, Davis, Calif.

IT has been the observation of the writer that in many laboratories which he has visited, the platinum needle used was perhaps the one article which had not been improved in the course of time. It was his experience to find usually a glass rod with a wire pushed into the end. Now and then he observed one of the patent arrangements which have jaws to grasp the wire, but these are expensive and soon corrode.

For some time we have used a platinum needle which is cheap and easily made; so it is felt that a description of it might add to the sum total of useful kinks to be used about the laboratory. Figure I is a drawing of the needle as used.

It consists of a glass tube, one end of which may be rounded off in a flame. Into this glass tube is inserted a copper wire, which is bent in the fingers so as to take a deal of pulling to remove from

FIGURE I

the tube. Into one end of the copper wire a bit of platinum is fused. This fusing is done by holding the two wires in the flame. The copper will soon melt and a little ball of molten copper will form on the end of the wire, into which the platinum—heated to redness—is quickly thrust.

A little practice may be necessary in making the first one, but it will be found to be a very handy needle, much more sightly than the average, and much cheaper than the patented affairs with the jaws which bite into the platinum.

THE COMMINUTION OF BLOOD CLOTS FOR CULTURES

T. F. SELLERS, F. A. P. H. A., and JANIE F. MORRIS

State Board of Health, Atlanta, Ga.

THE culturing of blood clots is rapidly becoming a routine procedure in a number of laboratories. Specimens of whole blood are received at the Georgia State Laboratory to be examined by agglutination tests for typhoid, Brill's (typhus), undulant fever and tularemia, also for syphilis by the Wassermann and Kahn tests. Ninety-five per cent of all such specimens are submitted in Keidel vacuum tubes.

After the serum is drawn off for the serological tests the clot is placed into bile glycerine, broth or brain liver infusion (Hibler's), depending on the purpose of the culture. Where only a typhoid or paratyphoid culture is requested, the clot goes into bile glycerine

medium and is dissolved. If any general or specific culture other than typhoid or paratyphoid is requested, the clot is placed in plain or glucose broth or Hibler's which does not dissolve it. It would, therefore, be possible for organisms to be trapped in the mass so as not to escape. Such cultures may be negative even after several days' growth. To avoid this possibility it was necessary to devise a method of breaking up or comminuting the clot. Two methods have been devised.

Because of the tough slippery nature of the clot, such instruments as stiff platinum needles, glass rods, scalpels and forceps proved unsatisfactory. It was found that the ordinary three pronged long handle pickle or oyster fork with the tips of the prongs ground down to a cutting edge about ⅛ inch in width answered the purpose fairly well. After the clot has been dropped into the medium the sterile fork is used to chop it into small particles.

While the pickle fork method was a great improvement over any device previously tried, its use at best requires several minutes during which time the mouth of the culture bottle or flask is exposed to contamination; so we tried forcing the clot through the nozzle of a Luer syringe. This works excellently. An ordinary 10 c.c. Luer syringe is sterilized, preferably by dry heat. After sufficient serum has been withdrawn for study, the remainder of the specimen, including the clot, is dropped into the barrel of the syringe, the plunger inserted for a short distance, and the barrel turned with the nozzle upward, to expel the air with the plunger. The nozzle is then held over the mouth of the medium container and the clot "spued" into the media by pressure on the plunger. A thorough comminution of the clot is thus obtained. In our experience this is less apt to be attended with extraneous contamination than the pickle fork method.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Health in Iceland—In many respects, public health problems in Iceland are unique. There are many striking differences in the behavior of certain diseases in Iceland and in other countries. The country's remarkable immunity to certain diseases which are relatively common elsewhere is, to a large extent, an unsolved problem. Acute rheumatism is very mild and resultant cardiac complications are infrequent. Lobar pneumonia is frequent, 19 per cent of the cases occurring in patients unde. 15 years of age. Diabetes is almost unknown and cancer of the uterus is very rare. Cerebral apoplexy is common in the almost complete absence of syphilis and it has been observed that cerebral apoplexy runs in families.

There are about 100 doctors in Iceland, 48 of whom act as medical officers of health. Few figures are so demonstrative of the progress made during the last decades as those dealing with vital statistics. The average infant mortality of 52.3 per 1,000 births in the 5-year period 1921–1925 is among the lowest, if not the lowest, in Europe. Until the last quarter of the 19th century, tuberculosis was hardly known in Iceland. In 1921, the number of notified cases was 745, and in 1927, the number increased to 1,100. The tuberculosis death rate for the period 1911–1915,

with an annual average of 147 deaths, was 1.7 per 1,000 population and in the period 1921–1925, with an annual average of 186 deaths, the rate was 1.9 per 1,000 population. The first tuberculosis sanatorium was built in 1910. Leprosy was formerly rife in Iceland but in 1927 the number of lepers was reduced to 44. Gonorrhea became endemic in 1890 and syphilis after 1900. The influenza epidemic of 1918 reached Iceland and lasted for 5 months. Three districts escaped completely by voluntary isolation. A serious outbreak of epidemic pleurisy occurred in 1926. An epidemic of measles was imported in 1924 and lasted until 1926. Prevention by injection of the serum of convalescents was found effective in some districts.

Hydatid disease of the liver was so common 60 or 70 years ago that 2 per cent of the inhabitants were supposed to suffer from it. Drastic measures have been taken against it and it is now becoming rare. Enteric fever has long been endemic in Iceland, with serious outbreaks from time to time. Scarlet fever became endemic early in the present century but only 5 cases were reported in 1927. Acute poliomyelitis had been rare until 1924 when a serious epidemic broke out suddenly. An epidemic of whooping cough was imported in 1926. The rarity of rickets is in dispute but it is far from being as common in Iceland as in the Faröe Islands.—Observations in Iceland, *Lancet*, 2: 745–750 (Oct. 5), 1929; *Lancet*, 2: 801–802 (Oct. 12), 1929.

The League Steps Out for Greece—The League of Nations was requested to make a study of sickness and its prevention in Greece and present a plan for national health administration. The Health Committee accepted the obligation and a survey was begun. The group of health surveyors found a population almost exactly that of New York City; no machinery for disease control except port quarantine; about 30 trained nurses; death rates of about 14 to 22 per 1,000 and birth rates about 18 to 30 against a death rate averaging 12.3 and a birth rate 19.7 in the registration area of United States. They found 23 per cent of deaths so indiscriminantly reported as to be unclassifiable.

Typhoid rates in Greece are about 40 to 53 per 100,000, due to water soiled by surface drainage. About 20 per cent of deaths are from diarrhea and enteritis in children under 2 years, and about an equal number from tuberculosis, with malaria a close third. There is no compulsory notification of acute communicable diseases of childhood or of tuberculosis or venereal disease. The prevalence of scarlet fever and diphtheria is very low. Tuberculosis was not serious until the housing and economic crises of the past decade; the rate in Athens in recent years has reached 400 per 100,000 population and now is 300 or over. Similar tuberculosis rates prevail in Patras and Corfu and rates as high as 544 are reported from the smaller Cyclades. In r u r a l regions where grazing and grain growing conditions are good, rates of 150 or under are found. Malaria is prevalent in Peloponnesus and Macedonia, from 30 to 90 per cent of children being found with malarial infection by means of the spleen index. Trachoma is a steadily increasing scourge and is prevalent in from 5 to 10 per cent of all school children. Athens disclosed 75 to 100 active cases of leprosy under no administrative supervision and without medical control. Only a few hundred of the probable 1,000 lepers in Greece are exiled. As would be expected, rabies is rampant.

The maternal mortality of Greece is low, apparently because of the small amount of interference with delivery and the vigorous physical condition of peasant women. Owing to the prevalence of breast feeding, infant mortality

in Greece is not high. Although it reaches 140 in some cities, it is more commonly 90 per 1,000 live births and is found as low as 60.

After 6 months of training in England and various European cities and rural areas, a picked group of young Greek physicians will, in February, form as members of the School of Hygiene and Health Center in Athens the nucleus of a permanent Hellenic Health Service. For 5 years the League will provide a professor of preventive medicine and director of the school, a chief of a division of malariology, and a sanitary engineer. The organization will be that of centers serving health districts according to local needs and subject to technical direction and advice from the Athens center and School of Hygiene.—H. Emerson, *Survey*, 63: 283–286, 308–309 (Dec. 1), 1929.

Sickness in Essex County—An intensive morbidity study was carried out in Essex County from October, 1927, to September, 1928, to supplement the Rural Survey conducted by the New York State Department of Health in 1927. The estimated population of Essex County is over 18,000, the number of persons for every physician averaging about 900. The cases of sickness totalled 19,179. Communicable diseases numbered 312, or 1.6 per cent of the total cases. The number of cases of sickness reported among women was slightly higher than among men. Surgical cases numbered 2,641 among men and only 1,312 among women. The leading cause of non-reportable diseases was cold with a total of over 5,000 cases, or 26.8 per cent of all non-reportable diseases. Surgical cases (except gynecological) were responsible for 21.0 per cent, followed by cases of digestive disorders with 12.2 per cent, that is, 60 per cent of all causes of sickness were listed under these three heads. Of the 1,055 cases of nervous disorders, one-seventh were given as organic and the rest functional. Cases of diseases of the skin totalled 851, one-third of them being contagious. Of the total 535 cases of diseases of the heart, 121 were rheumatic, 9 syphilitic and 405 classified as "other forms." There were 30 cases of syphilis reported, 2 being congenital and the rest acquired.

Surgical cases represented 28.3 per cent of all cases among males and 13.8 per cent among females. Cases of digestive disorders were more prevalent among women, 13.6 per cent, as compared with 10.8 per cent among men; and the proportion of cases of nervous disorders was more than double the corresponding figure for men, 8.0 per cent and 3.1 per cent respectively. Among women, one-tenth of the total of sickness was headed gynecological. Operative treatment was needed in 130 of the 1,001 cases reported. The number of cases of gonorrhea among men, 165, was 6 times that among women, 28, corresponding percentages being 1.8 and 0.3.

The leading reportable disease was scarlet fever with 35.6 per cent of all cases, followed by mumps, 18.3 per cent, and pneumonia, 14.4 per cent. Gonorrhea is the most prevalent communicable disease in the section of the county represented in the survey, the total number of cases exceeding by more than 70 per cent that reported for scarlet fever. Syphilis was sixth, taking precedence over tuberculosis. The greatest amount of sickness, 26.7 per cent, occurred during the three winter months and the least, 23.3 per cent, during the third quarter of the year.

Comparing the Essex County Survey and the Rural Survey, it was found that in general the points of similarity were much more numerous than the points of difference. Communicable diseases represented a higher percentage, 3.3, in the Rural Survey than in the Essex County Survey, 1.6 per cent. The proportions of colds in the two surveys were practi-

cally the same. This survey was valuable in that it gave support to the important facts brought out in the more extensive Rural Survey.—J. V. Deporte, *New York State J. Med.*, 29: 1310–1316 (Nov. 1), 1929.

A Smallpox Outbreak in Massachusetts—This is a report of an outbreak of mild smallpox in one Massachusetts community with a population of about 10,000 over a period of 4 months. There were 223 cases reported and no deaths occurred. The 223 cases occurred in 113 families totalling 620 individuals. After 65 cases had been reported as chicken pox, an investigation was made and all of the cases were pronounced smallpox. From 1924 to 1928 about 86 per cent of the cases of chicken pox that occurred were in the 0–9 year age group, whereas in this outbreak of smallpox but 19 per cent of the cases occurred in the same age group. Most of the cases were very mild and of the discreet type. About 9,600 individuals were vaccinated within 3 days of the analysis of the disease. Only 2 of the 223 cases had been successfully vaccinated and these more than 30 years ago. Of 23 contact cases that developed outside the community, 22 were in nearby Massachusetts towns and 1 in New York City. Of these, only 4 had been previously vaccinated, and these more than 20 years ago. Forty-one cases were distinctly modified by vaccination. Nineteen of these 41 cases had their onset within 3 days after vaccination. Seven of the 23 contact cases were modified by vaccination. Up to July 1, 1929, Massachusetts had reported 272 cases of smallpox, 223 being directly concerned with this outbreak and 23 of them contact cases. Massachusetts has not had as many as 272 cases of smallpox reported in any previous year in the past 26. This particular community had evaded the compulsory public school vaccination law for a number of years.—P. McKnight and L. Scamman, *New England J. Med.*, 201: 361–362 (Aug. 22), 1929.

Diabetes Record for 1928—A study of preliminary census returns from 21 states and Hawaii showed that the number of diabetes deaths had increased from 6,093 in 1927 to 6,808 in 1928. Nineteen states showed increases in the death rates, while only two, Delaware and New Hampshire, showed declines. In spite of a decrease of 2.4 per 100,000, New Hampshire reported a rate of 27.9, the highest rate for the 22 localities. Vermont had a rate of 27.0 and Arizona, 5.9, the lowest reported. A further study of 50 cities since 1912 showed an increase in the diabetes death rate from 15.9 to 23.2 per 100,000 in 1928. The rates for last year were the highest on record. Another study of the diabetes death rates for 1927 and 1928 for 141 cities of the United States based for the last year on a population of nearly 38,000,000 showed that diabetes death rates had increased in 94 cities and declined in 47 others. The rate for the 141 cities increased from 19.4 per 100,000 in 1927 to 22.1 in 1928. Of the 141 cities, Yonkers had the highest rate for 1928, 44.5, closely followed by Schenectady, 42.9, and Utica, 40.3 per 100,000. The 6 largest cities in the United States, all with a population of a million or more, showed increases from 0.6 per 100,000 in Detroit to as much as 5.6 in Cleveland. The New York City rate showed an increase of 3.1 and the rate for Philadelphia increased 4.9 per 100,000. A detailed study revealed no particular concentration of diabetes deaths in any section of the country. Some very curious contrasts resulted. The rate for Minneapolis was 24.1 per 100,000 while that for St. Paul was 13.4. The rate for San Diego was 35.9 as against only 14.9 for Los Angeles. A study of frequency rates and the per capita sugar consumption for 8 countries

confirmed the viewpoint that an excessive sugar consumption is one of the direct contributory causes toward an excessive death rate from diabetes. Italy with a diabetes death rate of 5.5 per 100,000 and a sugar consumption per capita of 8.1 kilograms showed quite a contrast to the United States with a rate of 17.3 and a per capita sugar consumption of 48.1 kilograms.

Diabetes is less common among negroes than whites. In 1926, the adjusted diabetes death rate for the registration area of 1920 was 18.1 per 100,000 for the white population and 12.7 for the colored. In a typical state, as South Carolina, the rate for the white population was 10 per 100,000 while the negro rate was 8.1. In Tennessee the negro rate, 9.2, exceeded the white rate of 8.6. The death rates for females are higher than those for males. In 1926, the adjusted male diabetes death rate was 14.1 against a rate of 20.9 for females.—F. L. Hoffman, *Spectator*, 123: 19–21 (Nov. 7), 1929.

Vital Statistics for Northern Ireland—The Registrar-General of Northern Ireland has just published the annual report for 1928. This report is the first for Northern Ireland to contain death rates standardized for age and sex distribution of the population. These rates are the ones that would be experienced if the mortality rates of the community at various ages and sexes were to prevail in a population selected as standard. The standard population adopted is that of England and Wales in 1901, and as this is also used as a standard for England and Wales, the rates for the two countries are comparable. The standardized rate for Northern Ireland in 1928 is 11.6 per 1,000 population, which compares with a rate of 9.9 per 1,000 for England and Wales. A notable feature of the comparison of the standardized rates is the relatively high rates for females in Northern Ireland, these rates being on the average in the years 1926–1928 about 96 per cent of the rates for males whereas the corresponding ratio for the England and Wales rates is only about 81 per cent. In general, the more rural areas of Northern Ireland enjoy the lowest death rates.

The report also includes annual abstracts giving in detail the number of marriages, births and deaths during the year. The birth rate for 1928 was 20.8 per 1,000 of the estimated population, or 0.5 below that for 1927. There are included numerous comparative tables and notes relating to infant and maternal mortality, inquests and causes of death. Of all single defined diseases, heart disease bears the greatest proportion to the total deaths at all ages, which is the usual experience.—*Annual Report for Northern Ireland for 1928.*

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

STREAM POLLUTION CONTROL IN ILLINOIS

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UNTIL July 1, 1929, three separate state departments had some jurisdiction relative to stream pollution prevention and abatement, and a fourth department made studies and investigations of pollution but had no authority to take corrective action. This divided and overlapping authority did not make for efficiency or economy in field investigations nor promote effective action. Further, it resulted in separated records dealing with the pollution and the quality of the waters in Illinois. Also, none of the laws under which the departments operated up to July 1, 1929, were very definite or fully effective for handling sewerage and stream pollution work.

The Illinois government under the governor is divided into 11 departments, with a director of each department appointed by the governor. The departments in turn are divided into divisions. The stream pollution law that became effective July 1, 1929, established the Sanitary Water Board composed of the directors of the 4 departments that have interest in some phase of stream pollution, sanitation, and conservation, and a fifth member appointed by the governor to represent manufacturing interests. The 4 departments are Public Health, Conservation, Agriculture, and Purchases and Construction (Division of Waterways). The chief sanitary engineer of the State Department of Public Health is designated as ex officio technical secretary of the board.

The law makes it the duty of the Sanitary Water Board to study, investigate and determine ways and means of eliminating pollution from the streams and waters of the state, and of preventing such pollution that is detrimental to public health or to the health of animals, fish, or aquatic life, or detrimental to the practical use of the waters for recreational purposes.

Pollution is defined by this act as existing in any of the said waters if,

> . . . as the result of any discharge of any liquid or solid substance, the quality of any of said waters, after reasonable treatment, is impaired for public water supply, bathing or recreational purposes, if said waters were reasonably capable for use for public water supply, bathing or recreational purposes before the discharge occurred of which complaint has been made to said Sanitary Water Board; or, if obnoxious odors result from such discharge into any of said waters near buildings, roads and lands occupied or used by human beings, *provided* that odors shall not be deemed to be obnoxious in any case where the Sanitary Water Board has determined that the discharge causing such odors does not constitute pollution within the meaning of this Act; or, if the quality of any of said waters is impaired for the use of live stock, or kills, or is injurious to fish life, when said waters were reasonably practicable for use for watering live stock or for fish life.

The Sanitary Water Board shall have the

right to decide and define where such pollution exists and it is hereby given exclusive jurisdiction for that purpose.

No sewerage system or changes, additions or extensions to existing systems can be made until plans have been submitted to and a permit obtained from the Sanitary Water Board, except that no permit is required for sewers which serve a building occupied by 15 persons or less. The board is given the right to require any owner of a sewerage works to submit any information, operating records, etc., as the board may desire at any time.

Whenever the Sanitary Water Board shall determine that water pollution exists as defined in the act, the board is authorized to serve notice and hold a hearing. Following such hearing the board has the right to issue an order directing within a specified time that the pollution be abated. Upon failure of any party to comply with the board's order, the Attorney General is authorized and required to commence action in the name of the people of the state.

Although no permit is required for sewerage works serving 15 persons or less, if such sewerage works cause pollution the board can take the same action as for any other sewerage installation in case of water pollution.

The board is authorized to establish standards of purity for any of the waters of the state.

It is the duty of the technical secretary to handle such correspondence, make or arrange for such inspections and investigations, and obtain, assemble or prepare such reports and data as the board may direct or authorize. The board by law holds six regular meetings each year, and special meetings are called by the chairman or by any two members of the board.

The Illinois Sanitary Water Board had its organization meeting October 16, 1929. Sewerage plans are being reviewed, permits issued, stream pollution, sanitation and conservation investigations made, and action taken to prevent and abate pollution in accordance with the provisions of the law. Although only a little time has elapsed since the board was organized, successful work has already been done toward the prevention and abatement of water pollution and the indications are that the application of this new law will make stream pollution prevention and control work by the state more efficient and effective than in the past because of the consolidation of the state activities in one legal body with definite authority. The mobile water and sewage laboratory which was obtained by the Department of Public Health for use of the Sanitary Engineering Division just before the Sanitary Water Board law went into effect has been made available for work of the board.

STREAM POLLUTION PROGRAM IN VIRGINIA

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MORE insistent demands by sportsmen, and a desire on the part of industry to forestall the passage of radical laws against stream pollution before the actual conditions had been determined by scientific surveys, were the two principal factors which resulted in the formation of a voluntary coöperative committee in Virginia to carry on stream studies. The public, generally, has become more interested in stream conditions; first, because more people

get out into the country as a result of the road building program, and second, the number of travelers has been increasing each year due to the extensive campaign in advertising the historical and recreational places. Finally, it was apparent that if the streams were to be kept reasonably clean, some action with regard to adopting a comprehensive and rational policy should be taken quickly because of the many new industries locating in the state.

These were the facts which were brought out at a public meeting held in the summer of 1928 and attended by representatives of industry, the municipalities, the state health and conservation departments, sportsmen and by other citizens interested. The call for this meeting was sent out by the chairman of the Commission of Game and Inland Fisheries, at the suggestion of a representative of the National Pulp and Paper Association who was present to describe what was being done in other states in the disposal and utilization of industrial wastes.

It was the consensus of opinion that a satisfactory solution of the problem was dependent on the full coöperation of all the interests, and that such coöperation could best be secured by means of a voluntary coöperative committee consisting of the following members: 4 from industry, 2 from the Conservation Commission, and 1 from each of the following: the State Health Department, League of Municipalities, Izaak Walton League, and the Commission of Game and Inland Fisheries. The chairman of the latter commission was elected chairman of the committee. The technical phases of the work are under the direction of the chief engineer of the department of health, who serves as secretary of the committee.

There were no funds available from the State Treasury. However, the Commission of Game and Inland Fisheries offered to appropriate from a special fund the sum of $2,500. The 4 representatives of industry gave assurance of raising an additional $5,000 by subscriptions from the various companies. It was believed that the $7,500 would be sufficient to make a good start during the season of 1929, and until the next session of the legislature early in 1930.

The actual cost of the surveys under way will be about twice the above appropriation. The additional work has been possible because of liberal cooperation on the part of the Virginia Polytechnic and Military Institutes, the University of Virginia, and several municipalities.

The Virginia Polytechnic Institute is located in the southwestern part of the state and its chemical laboratory has been used as headquarters for the surveys of streams in that district. For similar reasons, the laboratory facilities at the Virginia Military Institute have been used for streams in the north central district. A third laboratory, maintained by the City of Lynchburg, has also been used during part of the season. Consequently only a small proportion of the available funds has been used for chemicals, laboratory equipment and apparatus.

The headwaters of 6 of the principal streams have been surveyed during the current season and a limited amount of work has been done on several others. The sanitary engineer employed by the committee has immediate supervision of surveys of the 3 streams in the north central part of the state, and work on the other 3 streams in the southwest has been under the direction of the first assistant engineer of the State Department of Health. On each stream, stations were established from which samples were collected twice weekly (from July 1 to November 1) and shipped to the central laboratory for analysis.

Additional work has included special analyses of river samples at critical points, analysis and measurement of certain industrial wastes and sewage, inspection of industrial plants, and other field investigations properly coming within the scope of the activity.

The working personnel has been as follows:

North Central District—One sanitary engineer, employed by the committee on full-time basis, a faculty member of the chemistry department half-time during summer months, one graduate student and one undergraduate student during the four summer months.

Southwest District—First assistant engineer of the State Department of Health (about one-third of his time), a member of a faculty half-time for four months, one graduate student full-time for four months, and a student full-time for two months. In addition, three other members of a faculty have given assistance.

Necessarily, the general supervision and planning of the surveys has required a considerable portion of the time of the chief engineer of the State Department of Health.

The biological studies are being made by a graduate of the University of Virginia, in connection with his work for a doctor's degree.

Mention should be made of the survey of the James River by the City of Richmond during the fall of 1928. This was undertaken in order to determine the causes of certain difficulties at the water filtration plant. The conclusion was reached that wastes from a large paper plant, 245 miles upstream, seriously interfered with the chemical treatment of the supply during low river stages and that certain other trade wastes were partly responsible in a lesser degree. A well known firm of consulting engineers was employed. The cost of the survey was about $10,000. A report has not been published.

STREAM POLLUTION IN WEST VIRGINIA

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WEST Virginia has had anti-stream pollution laws in the past similar to those in other states. The Game and Fish Commission was interested in so far as the pollution affected fish life and did some very good work in reclaiming some streams. The law was difficult to administer as it strictly prohibited dumping of material injurious to fish life into the streams. The suits brought by sportsmen and others were not effective in eliminating the condition, but rather stirred up ill feeling between the industrial and recreational groups. The situation called for a program of scientific study and research rather than the imposition of fines.

The Health Department was interested in stream pollution in so far as the pollution affected the public water supplies. The supervision of sewage disposal also directly connects this department to any program of stream reclamation.

Each year the problem of stream pollution came up for discussion at the short school, held jointly by the Sanitary Engineering Division of the State Health Department and the College of Engineering at the State University, for the instruction of filtration plant oper-

ators and water works superintendents. They recommended that the Legislature provide funds for research on stream pollution.

The coöperative effort of the state sanitary engineers on the Ohio River watershed and industry in removing the phenol wastes from the streams gave impetus to the movement for stream pollution control.

An attempt was made to secure the coöperative support of a group composed of representatives from the State Health Department, State University, Manufacturers Association, Coal Operators Association, Fish and Game Commission, Wild Life League, and the Conference on Water Purification, to a research program financed by the Legislature and carried on at the University of West Virginia.

The industrial group felt the need for a definite program or policy regarding stream pollution and realized the inadequacy of the law at that time, and other groups, such as the recreational and public health, wanted more effective legislation too. Hence, a committee made up of representatives from each faction met and drew up a bill for presentation to the Legislature. This bill creating the State Water Commission was passed by the legislature, signed by the Governor and became effective June 1, 1929.

The State Water Commission is composed of the Commissioner of Health, the Chairman of the Public Service Commission, and the Chairman of the Game and Fish Commission. The Director of the Division of Sanitary Engineering in the State Health Department is required to perform such services as may be requested by the Commission in connection with its duties. The College of Engineering at West Virginia University is requested by the law to render such assistance, in so far as it can, in the study of questions connected with pollution of waters. The Commission has elected the Commissioner of Health as its Chairman and has selected the Director of the Division of Sanitary Engineering as its Secretary. Executive authority is vested in the Commission.

The law authorizes the Commission to investigate, hold hearings, and enter orders regulating specific cases of pollution. It may specify the system to be used, or correct and approve the plans submitted. The cost of the installation, maintenance, and operation of the system must not be unreasonable or inequitable. The Commission may cause the enforcement of any of its orders in the courts. Any person aggrieved by an order of the Commission has recourse to the courts.

At present the funds for the operation of the State Water Commission come from the three commissions represented on it, each bearing an equal share. These funds are limited. The Legislature in passing the bill did not provide funds for its operation. A provision was made in the act whereby the Commission could coöperate with any public or private experimental agency and receive therefrom, on behalf of the state, and for deposit in its treasury, any money such agency might contribute as its part of the expense. The personnel now consists only of a chemical engineer working under the direction of the Commission and doing both the field and laboratory work.

During the past summer a study was made of the Cheat River Basin in which the various sources of pollution were located and classified. The quantity and quality of the wastes were determined as well as their effects upon the stream. Studies were made upon the self purification of the stream and its recovery from the pollution load. A detailed study was made of the lake formed by a large water power dam lo-

cated at Cheat Haven. This report has been printed for distribution. The work was carried on jointly by the State University represented by the Professor of Sanitary Engineering, and by the State Water Commission represented by its chemical engineer. The report was written jointly. Since the wastes from mines constitute a serious problem in this state, the State University is planning a research program upon this subject. An advisory board has been formed of prominent mine operators and engineers to assist in the work.

A reconnaissance survey was made of the tanning industry within the state and an agreement has been formed whereby a more efficient and satisfactory disposal of tannery wastes will be instituted.

The Commission has also become interested in sewage disposal and has informally requested action in two critical conditions where public water supplies are affected.

Future work includes a study of the public water supplies of the state and detailed work on tannery and other industrial wastes. A detailed pollution survey and study will be made of another watershed with the coöperation of a municipal water board engineer located on the shed.

Solving Oil Field Waste Disposal Problems—The Santa Fe Springs Waste Water Disposal Company, a non-profit coöperative organization, was formed by 20 oil producing companies to dispose of the salt water brought to the surface in oil well operation at Santa Fe Springs, Calif. The waste water is passed through settling and skimming tanks to remove mud and oil, riffle ramp aerators being provided to release oil in suspension. These tanks reduce the oil from an initial content of 400 or 500 p.p.m. to about 12 p.p.m., resulting in a daily oil recovery ranging from 200 to 400 bbl. A vitrified clay pipe line varying from 18 to 24 inches in diameter carries the effluent waste water 81,000 feet to the ocean.—Anon., *Eng. News-Rec.*, 102, 20: 795–798 (May 16), 1929. Abstr. D. E. Kepner.

Movement of Water in Alluvium—To determine the possibility of procuring a certain amount of underground water in the Loire Valley (France), the studies described here were made. The underground water in this valley comes partly from the bed of a river and a canal by percolation, and partly from drainage from the hills. The point of contact between the hill and the river waters has a to-and-fro movement. As a means of finding the proportions of each type of water, chemical analysis was used as the hill water has a larger chalk content. Temperature was employed also, as the conduction of heat to deep levels in the earth is known to be small.

To find the direction of flow in the ground, iron tubes having perforations were sunk at the angles of a pentagon. In the center other similar tubes into which colored solutions were poured were sunk. The strength of the solution as it appeared in the outer tubes gave information concerning the flow.—F. Dienert, *Ann. d'hyg.*, V: 6, 669–691, 1928; *Bull. Hyg.*, 4, 4: 324 (Apr.), 1929.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

The Evaluation of 5 and 7 Per Cent Carbon Dioxide Mixtures as Respiratory Stimulants—Summary—1. Healthy young adults at rest experience very varied degrees of response when given inhalations of 5 and 7 per cent carbon dioxide in air. 2. In some subjects the response to 5 per cent carbon dioxide consists in little more than a doubling of the normal minute-volume. 3. Seven per cent carbon dioxide induces the maximal ventilation obtainable without causing undue discomfort to normal subjects. 4. The same subject breathing identical concentrations of carbon dioxide responds differently on different days but does not lose his characteristic type of response.—Emery Haller, Walter Killiches, and Cecil K. Drinker, *J. Indust. Hyg.*, XI, 9: 293–313 (Nov.), 1929.

The Use of 7 Per Cent Carbon Dioxide and 93 Per Cent Oxygen in the Treatment of Carbon Monoxide Poisoning—From the conclusions: A study of the experience since 1923 in the use and experimental examination of the effects of 5 per cent carbon dioxide and 95 per cent oxygen in the treatment of carbon monoxide poisoning has indicated the wisdom of increasing the concentration of carbon dioxide to 7 per cent for the first 5 to 20 minutes of treatment. No experimental or clinical evidence has appeared indicating that the increase in carbon dioxide to 7 per cent carried with it the slightest danger. Indeed, all facts point to benefit to the circulation from 7 per cent carbon dioxide in 93 per cent oxygen. Three hundred cases have been so treated, and the treatment completed with the usual 5 per cent mixture. The results of this field work have been uniformly good.—Cecil K. Drinker and Thomas J. Shaughnessy, *J. Indust. Hyg.*, XI, 9: 301–313 (Nov.), 1929.

Some Physiologic Reactions to Cooling Power during Work, with Special Reference to Evaporation of Water—From the summary: The cooling effect of wind caused a decrease in pulse rate, but this was observed less in lightly clothed subjects than in those nearly naked. Also, the increase was greatest under the warmest conditions studied, i.e., in the lightly clothed subjects working in moist air.

Rectal temperatures as a rule, but not always, increased slightly, by 0.5 to 1° F., during work at 25° C. Again, the heat produced during work was three times that produced while at rest. There are likewise variations in the response of different subjects with regard to water evaporation—from nil for the coldest conditions to 240 gm. per hour under the warmest conditions.

"Greater use should be made of removal of clothing and movements of air to render conditions comfortable for indoor muscular workers. If this is done, there is a wide range of atmospheric conditions above and below 15° C., under which comfort is attained with moderate work."—J. Argyll Campbell and T. C. Angus, *J. Indust. Hyg.*, XI, 9: 315–327 (Nov.), 1929.

Physical Examination of Athletes—A movement concerning chiefly working classes has resulted in the physical examination thus far of more than 3,000 young men and women, ranging in age

between 15 and 24, and the results are a great surprise, for more than 50 per cent of the persons who engaged in sport activities presented defects of such a nature as to make such participation inadvisable. Especial attention was given in the examination to the heart, lungs, gastrointestinal tract, and a functional testing of the organs of circulation and respiration, of the eyes and ears, and a urinalysis.

The most frequent obstacles to participation in sports lay in disorders of the lungs and the heart, the existence of which the patient was not infrequently unaware. Anomalies of the spine, disease of the tonsils, and flatfoot and sagfoot were very frequent, the last two in workmen.

In women, hysteria was a frequent condition and to these mountain climbing and swimming were usually forbidden. Nevertheless interest in sports has resulted in a marked decrease in smoking and drinking in all classes.

The sport committees have decreed that only such athletes may participate in contests as have submitted to a careful examination. "It is an interesting fact that especially football players and those who engage in heavy athletics endeavor to avoid the examination, if they are 'professionals,' because they fear the results."—Vienna Letter, *J. A. M. A.*, 93, 22: 1747–1748 (Nov. 30), 1929.

United Fruit Company, Medical Department, 17th Annual Report—This volume of some 400 pages with many full-page illustrations in halftones, charts, diagrams, etc., devotes: Sec. I, to comments on some of the more important diseases occurring in the tropical divisions of the company's interests; Sec. II, to a number of papers upon malaria; Sec. III, to dysentery, and other tropical diseases both of the employed and their families; Sec. IV, to surgical disabilities; Sec. V, to diseases of the special senses, pathology, food poisoning, snake bite cases, etc.; and Sec. VI, to organization and vital statistics.

While malaria causes a greater amount of sickness than any other single infection on the plantations of the company, lobar pneumonia causes the greater number of deaths. The incidence of pneumonia does not differ materially from year to year while the fatality is high—28 to 37.5 per cent. Contributing factors are the lowered resistance of the native Indian, Negro and mixed races; the high labor turnover, which decreases the income; the malnutrition, malaria, hookworm, syphilis, etc., which exist; also the prevalence of influenza. The 1928 epidemic was mild in form and occurred in all the Central American, Columbian, and West Indian plantations except Cuba.

There were only 35 cases of typhoid fever among the employees in all of the divisions (apparently involving 55,604 total employees), the chief sources of infection being traced to carriers and to flies. During the year nearly 8,000 injections of typhoid vaccine were used. Amebic dysentery has decreased from 536 cases with 17 deaths in 1926 to 331 cases with 3 deaths in 1928. The bismuth-subnitrate method of treatment has proved simple and effective and few cases resist treatment, while relapses are rare. Beriberi is increasing in some of the divisions, there being a total of 42 cases reported in 1928. The degree of hookworm infestation in the localities where the company operates is generally low, and oil of chenopodium is the vermifuge of choice. This disease is not one which appears to play an important rôle in the prevailing anemia.

Not a single case of either smallpox or alastrim was encountered in any of the plantations during the year. Diphtheria in the tropics is rare and usually of mild character. Of 228 cases of pulmonary tuberculosis treated in the hospitals, 150 developed among the labor-

ing population while there was a total of 36 deaths. Erysipelas is treated by the application of pure carbolic acid until the surface turns white when pure alcohol is applied. The results have been exceedingly gratifying, the temperature falling within 3 to 6 hours, and no further treatment is necessary. Herpes zoster is treated by the same method, and usually within 24 hours the patient can return to duty. Likewise, 5 per cent methylene-blue in water seems effective in erysipelas. Venereal diseases are a serious menace and of growing importance. Laws are rarely enforced, so that the social leper is generally permitted to run rampant, and many cases have to be hospitalized.

(The interested reader should consult this very replete volume for further information covering the diseases of tropical workers who are under elaborate medical supervision.)—United Fruit Company, Medical Dept., General Offices, Boston, Mass.

Sickness among Industrial Employees during the First Three Months of 1929—During the past 9 years a group of approximately 35 sick-benefit associations in industry has reported to the U. S. Public Health Service the cases of illness and nonindustrial accidents causing disability for 8 consecutive calendar days or longer among its members, and the monthly number of male and female members. The results have been published annually, but the present report is an attempt to supply a current index of illness of the adult occupied population covered.

An increase of 38 per cent, compared with the first quarter of 1928, is shown in the incidence rate of disabilities lasting more than 1 week. The respiratory diseases showed an increase of 86 per cent—due to the influenza epidemic, which disease was 163 per cent more frequent than in the same period the year before. Likewise, the pneumonia rate was 28 per cent higher. Deaths followed the increased frequency of sickness. A large insurance company reported an increase of 18 per cent in the industrial death rate for the quarter. In fact, the death rate for the quarter appears to have been higher than during the first 3 months of any year since 1920. Sickness from diseases other than respiratory had about the same frequency as in the previous year.—U. S. P. H. S., *Health News Release,* Jan. 1, 1930. See also *Reprint No. 1316* (Sept. 13), 1929.

Efficiencies of Painters' Respirators Filtering Lead Paint, Benzol and Vitreous Enamel Sprays—This determination of the efficiencies of respirators was made through a coöperative arrangement between the U. S. Bureau of Mines, the National Safety Council, and the U. S. Public Health Service. The specific questions which it was proposed to answer were as follows:

1. What filtering material, if any, is adequate—
   (a) To reduce the lead content of the air to which a spray coater is exposed from 200 mg. per cu. m. to 0.6 mg. per cu. m.?
   (b) To reduce the amount of benzol under similar conditions from 2,000 to 75 p.p.m.?
   (c) To reduce the number of silica particles under similar conditions from 200,000,000 to 100,000 per cu. m. as determined by the Palmer method?
2. How long would a layer of such material function?
3. How do certain typical masks now available measure up to this standard?

In general, respirators with cotton, paper, or fabric filters remove 90 or more per cent of the lead from air carrying paint mist, and restrain none of the solvent vapors. The addition of a canister or cartridge of activated charcoal to the respirator removes all solvent vapors until the charcoal becomes saturated. Usually, fresh filters are necessary at intervals of several hours, while

fresh cartridges of charcoal must be used when the latter is saturated, but canisters may last for weeks before a change is necessary. Respirators were somewhat less efficient against the silica-dust sprays, although most of those submitted for tests were more than 50 per cent efficient.—S. H. Katz, E. G. Meiter, and F. H. Gibson (U. S. Bur. of Mines), *Pub. Health Bull. 177*, 27 pp. ill., June, 1928.

Regulations for Spray-Coating—These regulations set forth the rules to safeguard the lives, limbs, and health of workers in spray coating operations, and place the responsibility of compliance upon both the employer and employee, with provisions for penalty, also for petition for modification.

The pamphlet discusses administration, definitions, specifications—their application, the specifications for booths—exhaust systems, rules of cleaning booths and spraying equipment, containers for spray materials, electrical equipment, additional requirements for protection against fire, exceptions for use of noncombustible materials, and additional requirements for health and sanitation. A final section covers features for health protection and protection from fire, arranged as recommendations. Ten plates for setting up equipments are included.

Among particularly interesting features are the definitions, the handling of vitreous enamel and siliceous materials, the rate of air velocity in booths, and the 17 special recommendations for health protection.—Penn. Dept. of Labor and Industry (*Special Bulletin*), 35 pp., 1929 ed.

Industry Reports, Published to Assist Underwriters in Classifying Industrial Hazards—The following list of articles has been published during the course of the year 1929, and an Index to all Volumes, I to IV, inclusive, has likewise been published. Each report consists of from 6 to 16 pages depending upon the nature of the industry or hazard discussed, and contains certain illustrations, tables, and an index to occupations (whenever a given hazard is discussed). Vol. IV, 1929:

No. 1—Household Electric Refrigeration
Nos. 2-3—Coke and By-products
No. 4—Gypsum Industry
No. 5—Turpentine
No. 6—Tobacco Products
No. 7—Chromium Plating
No. 8—Industrial Alcohol
No. 9—Lumber Industry
No. 10—Physical Impairment in Clerical Occupations
No. 11—Methanol (wood alcohol)
No. 12—Artificial Leather
—Retail Credit Company, Atlanta, Ga.

Health Hazards in Industry—J. J. Bloomfield, Asst. Physical Chemist, U. S. Public Health Service, with 15 pages of discussion at the 15th Annual Meeting of the International Association of Industrial Accident Boards and Commissions. U. S. Bureau of Labor Statistics, *Bull. No. 485*, 130–156 (June), 1929.

The Pathology of Silicosis of the Lung—In Ontario, silicosis has been found to affect chiefly gold miners, granite cutters, and metal grinders, but occasionally cement workers and quarrymen are affected. Clinically the study of this disease has practically reached a standstill, but pathologically it presents many aspects which invite investigation.

The lungs of 12 autopsy cases were carefully studied and the silicotic lesions divided into 5 different stages (which are described). The known periods of exposure ranged from 4 to 27 years. The diagnosis had been: 6 of tuberculosis, 2 of nephritis (including 1 with lobar pneumonia), 1 pneumonia, 1 heart disease, 1 external violence, and 1 unknown (mitral stenosis). The known

silica content of ash of the lung (shown in a table) varied from 6.24 to 45.32 per cent. Doubly refracting particles seen under the high power in 4 or more selected fields ranged from 3 to 96, while exogenous pigment of clay, iron, and carbon nature was present in all.

There was found to be no parallel between the amount of visible crystals and the per cent of SiO_2 in the ash, and the term "occult" is used to designate that portion of the silica which is invisible. "Occult" silica varies directly as the amount of fibrosis present.

Gye and Purdy judge it probable that inhaled silica is slowly transformed into colloidal silica, and the present study tends in every way to support this view. In theory, the disease must be progressive for some time after the individual leaves his dusty occupation, the progression either taking the form of increased fibrosis or of increased susceptibility to tubercle infection. (The major part of the article discusses the pathological sequence of events leading to silicosis, with 3 half-tone illustrations.)

The probable path of entry for the tubercle bacillus is by aspiration. In the early stages of silicosis, the victim is more resistant than usual to the infection, but in later states he becomes more susceptible. The peribronchial lymph glands remain singularly free from tuberculosis in cases of tuberculosilicosis, although such may also be true of uncomplicated tuberculosis.

Pneumonia is a great hazard in the earlier stages when dust inhalations block the lymphatic exits and fibrosis is slight. Thus, according to Collis, conditions favorable to pneumonia are usually unfavorable to tuberculosis, and *vice versa*.

The association with nephritis, previously noted by Collis, Gye and Purdy, is borne out in the fact that the 2 of the 12 cases here discussed died of nephritis.—T. H. Belt, Dept. of Pathology, University of Toronto, *Canad. Pub. Health J.*, XX, 10: 494–508 (Oct.), 1929.

Some Aspects of Silicosis in Industry—A group of cases recently seen were treated for pulmonary tuberculosis and silicosis was not suspected until a post-mortem examination was held on one of them. They were working in a small factory handling raw material (quartz) to be made up into a scouring powder, where even the process of filling the tins was accompanied with much dust.

There were altogether, within a period of 2 years, 6 or 7 deaths among the workers in this small factory in which not more than 15 persons—among whom 5 of the deaths which occurred were of young women—were at the same time employed.

Silicosis *per se* is an occupational risk of primary gravity, and allied with tuberculosis it forms the most fatal and at the same time most preventable group of tuberculosis cases.

It is surprising, therefore, to find how long it has taken the State to recognize these important facts, and it is only within the last few months in England that the provisions of the Workmen's Compensation Act have been applied to this occupational risk. The Dominions and other countries, notably the United States, are taking similar action.

According to Rolleston the tuberculosis affliction of the workers is not spread to their wives and families, who remained peculiarly free.—G. Quinn Lennane, *J. State Med.*, 37, 10: 602–606 (Oct.), 1929.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

The Nature of the Vitamin A Constituent of Green Leaves—The relation of the green color of plants to vitamin A stores has been pointed out by previous workers and in this experiment an effort was made to compare the potency of the lipoid extractive material from the green with the white or colorless leaves. Three to four times as much unsaponifiable matter can be extracted from a given weight of green as from white cabbage. The unsaponifiable material from the cabbage is incorporated in hardened cottonseed oil for feeding rabbits. It was found that the material from the green leaves was at least 10 times as potent in vitamin A as that obtained from the white leaves.

In attempting to concentrate the active principles, extracts of hot and cold alcohol and light petroleum were obtained and by the antimony trichloride color reactions it was determined that the most potent material was that associated with carotin in green cabbage. Carotin was prepared from cabbage, from spinach, and from carrots, and feeding experiments conducted with these concentrates. Carotin obtained from cabbage had the highest melting point and was presumably most nearly pure, and was active in a dose of 0.004 mg. per day. Carotin from spinach and carrots was not so pure and the positive dose required was 0.01 mg. per day. The residues from which carotin had been extracted were found to be inactive. The report by other workers of the inactivity of carotin in vitamin A is ascribed to the fact that fat other than that carrying the vitamin itself appears to be essential. The authors point to the accumulating evidence that more than one substance can function as vitamin A, and the difficulty of associating the activity of highly colored crystals from plants with the pale substances derived from animal oil. It is possible that vitamin A activity may be regarded as inherent in a special grouping of atoms common to several individual molecules rather than to one definite molecule.—Dorothy L. Collison, Eleanor M. Hume, Ida Smedley-MacLean and Hannah H. Smith, *Biochem. J.*, XXIII, 4: 634, 1929.

A Second Thermolabile Water-Soluble Accessory Factor Necessary for the Nutrition of the Rat—The division of the vitamin B complex into the antineuritic and antipellagric factors, B_1 and B_2, is accepted and this work indicates the probability of a third factor, tentatively termed B_3. A special diet supplemented with 6 per cent marmite as the B complex source gave growth comparable to normal food. Two types of experiments are recorded, one in which the rats were fed the basal diet plus B_2 till constant weight was obtained for a 9-day period, then varying doses of the B_1 administered. These doses adjusted to pH 6.5 vary from 1/10 to 8 times the daily pigeon doses. In no case was the growth at a normal rate.

In the second type of experiment, the animals were fed at the start with the basal diet plus both B factors. In every case growth ceased or was subnormal after 4 to 5 weeks. Treated marmite retards normal growth, indicating the destruction of another factor than B_1 by alkaline hydrolysis of the marmite. Further experiments indicated

that the substance B_2 is more thermolabile than the B_1. Discrepancies appear, the results reported here differing somewhat from facts reported by other workers, but it is pointed out that there is a possibility that the B_1 reported might have contained traces of the B_2 factor and that feeding experiments must be continued for 4 to 5 weeks to demonstrate the presence of this new factor.—Vera Reader, *Biochem. J.*, XXIII, 4: 689, 1929.

Some Evidence of the Existence of a Further Factor Necessary for Growth of the Rat—This experiment records the observations of a deficiency other than vitamin A in rats on a vitamin A-deficient diet. A vitamin A-free ration was prepared and this was irradiated in thin layers to provide ample supplies of vitamin D. This diet included a "vitamin-free casein" which was guaranteed substantially free from vitamin A. The dried yeast in the diet was also tested for vitamin B complex and it was found that 8 per cent of the yeast was sufficient for the B needs of the rat at all stages of growth.

Some of the rats on this diet failed to resume normal growth with the addition of cod liver oil, although some of the rats responded to a certain extent under such conditions. In the latter, the experiments were continued longer than the 5 to 6 weeks usually deemed necessary and these rats ceased to grow and would not resume growth with larger doses of cod liver oil, and only temporary growth resulted when the diet was supplemented with unlimited supplies of fresh watercress.

Then a product, "light-white casein," was substituted for the vitamin-free casein and rapid normal growth was resumed. However, other food substances were tested for this factor and good results were obtained with fresh milk, lettuce, fresh and dried grass clippings, ox muscle, liver and wheat embryo. Milk which has been slightly heated for 15 minutes is less satisfactory, although the "light-white casein" heated in thin layers for 24 hours at 105° was just as potent as the unheated.

Attempts were made to extract the "light-white casein" with cold alcohol and with cold alcohol and ether. The extract was ineffective, while the casein which had been extracted was as potent as before. Hot alcohol and hot ether resulted in more active extracts and the residual casein appeared somewhat impaired. Hot 90 per cent alcohol extracted from wheat embryo the active factor almost completely. Hot ether extract is also active.

Additional experiments were conducted on the "light-white casein" to determine whether the factor could be associated with the vitamin B complex, and it was found to contain neither B_1 nor B_2. The authors concluded that the factor is not vitamin E, which is not destroyed by heat as is this unknown factor. Furthermore the experimental animals indicated no shortage of vitamin E.

The authors conclude that the experiments indicate a hitherto unrecognized growth promoting factor rather than a biological inadequacy of the protein in the basal preparation.—Katherine H. Coward, Kathleen M. Key and Barbara G. E. Morgan, *Biochem. J.*, XXIII, 4: 695, 1929.

The Number and Type of Bacteria in Commercially Prepared Infant Foods—This investigation was initiated to learn the number and types of organisms found in various baby foods which may be commonly secured on the market and which are prepared from powdered milk. These proprietary compounds are arranged roughly in two groups, namely, those which serve as a complete nutrient for infants, and those which are "modifiers" to be added to cow's milk in various amounts

according to the requirements of the infant.

In examining the samples secured, the authors used standard nutrient agar and a specially prepared medium containing Difco tryptophane broth peptone and yeast extract. The latter medium is necessary to grow streptococci and those lactic acid producing bacteria which do not grow on ordinary standard agar.

Plates were incubated at 37° C. and 56° C. Five carbohydrate "modifiers" and one protein "modifier" were examined. It was found that these compounds contained organisms growing at 37° C. in numbers varying from 800 to 328,000 per gm. At 56° C. numbers of bacteria from 1,600 to 220,000 per gm. were found in these "modifiers."

Examinations were made of three synthetic compounds designed to offer complete foods for infants. These compounds were found to contain numbers of bacteria varying from 1,000 to 392,000 per gm. growing at 37° C. and from 1,000 to 128,000 per gm. growing at 56° C.

Six samples of dried or powdered milk and certain modifications of dried milk were examined. Bacteria, in these preparations, growing at 37° C. ranged from 10 to 112,000 per gm. and the number of bacteria growing at 56° C. varied from none to 600,000 per gm.

The predominating types of bacteria present in all samples were aerobic spore-formers capable of peptonizing milk. These bacteria were generally the *Bacillus subtilis* type although some organisms similar to *Bacillus cereus* were also present. The remaining bacteria isolated were cocci of miscellaneous types. It was found that the carbohydrate "modifiers" contained a higher percentage of thermophiles than did the protein "modifier" and the reconstituted complete foods.

It is pointed out that when the modifiers are added to milk the numbers of bacteria per gm. are reduced owing to the dilution of the modifier with the milk. The actual numbers of bacteria present may not be excessive, but harmful effects may be derived from the protein split products produced by the proteolytic spore-forming organisms which constitute the predominating type of organisms in these products.

Investigation showed that there was no seasonal variation in the sanitary quality of these infant foods as indicated by numbers of bacteria, but that there are certain constant sources of contamination throughout the year.

It is suggested that all commercially prepared infant foods should be required to meet the following sanitary standards: (1) They should contain no hemolytic streptococci. (2) Twenty c.c. of sterile milk, when inoculated with 0.5 gm. of the infant food and incubated at 37° C. for 10 hours, should show no visible peptonization. (3) They should contain less than 10,000 colonies per gm. when the duplicate plates are incubated at 37° C. and 56° C. for 2 days, using the special medium containing tryptophane broth peptone, yeast, extract and glucose.—G. J. Hucker and Alice M. Hucker, N. Y. State Agric. Exper. Sta. *Tech. Bulletin No. 153* (Aug.), 1929.

Botulism Due to Home Canned Bartlett Pears—At Los Banos, Calif., in May, 1927, two persons, a girl of 9 and her mother, aged 27, died with typical symptoms of botulism 30 hours and 42 hours, respectively, after tasting and swallowing pieces of home canned Bartlett pears which were obviously spoiled. The toxin of *Cl. parabotulinum* was demonstrated in an enrichment culture of the gastric content of the victims obtained at autopsy.

The suspected pears were highly toxic for guinea pigs on feeding and the presence of botulism toxin type A was dem-

onstrated in the syrup. Nothing definite concerning the method of packing and sterilization could be determined, but it was established that the lid of the jar which contained the poison was bulged; the rubber ring was not tight; and the pears had an abnormal odor.

The pH of the toxic syrup was 3.86. Yeasts and lactobacilli as well as toxic and non-toxic strains of *Cl. parabotulinum* were found viable in the syrup. The m.l.d. by subcutaneous injection of the syrup for mice was 0.0005 c.c. and for guinea pigs 0.001 c.c. The thermal death time of the *Cl. parabotulinum* spores from the pears varied between 2 and 3 hours at 100° C. Examination of other samples of home canned fruit from the home of the victim showed three additional jars of pears to contain *Cl. parabotulinum* type A, identical with the organism isolated from the pears responsible for the fatalities.

By experiment it was found that the spores of *Cl. parabotulinum* isolated from the pears would resist a temperature of 100° C. for 50 minutes when these spores were suspended in raw pear juice mixed with 20 per cent syrup, the pH being 3.7. Thus, if unsound raw material carrying a mass contamination of *Cl. parabotulinum* were used, the processing time of 20 to 30 minutes at 100° C. usually followed in home canning of pears would fail to destroy the spores of the toxicogenic anaerobe. The process given the toxic pears in this case was totally inadequate since yeasts and lactobacilli survived and grew.

Attempts to produce toxin experimentally in canned pears failed when pure cultures of *Cl. parabotulinum* were used. When yeasts and lactobacilli were inoculated with the botulinum organisms toxin production occurred regardless of the pH. It is concluded that the growth of the yeasts and the lactobacilli in the pears supplied the factors which are required by the botulinum organism to germinate and to form its toxin. Pears are not subject to botulinum spoilage provided fresh and sound raw material is packed under sanitary conditions. However, a jar with a layer of mold or definite signs of fermentation may contain the deadly poison.

It is probable that certain fruits and acid vegetables owe their immunity from botulinum spoilage less to their acidity than to the absence of food substances essential to the elaboration of toxin.—K. F. Meyer and J. B. Gunnison, *J. Infect. Dis.*, 45: 135 (Aug.), 1929.

Is Irradiated Farina as Bought in the Market Enriched with Vitamin D?—This is an assay of a commercial breakfast food alleged to be "irradiated with ultra-violet rays to impart the bone-building vitamin of sunshine." Young rats between 35 and 50 gm. weight were placed on a rachitogenic diet for 18 and 21 days respectively, and at the end of that time 2 rats in each lot were killed and inorganic blood phosphorus determined and roentgenograms taken to determine the degree of rickets. The rachitic rats were kept on the test diet and compared to rats on the same diet supplemented with 2 per cent of cod liver oil, with 10 per cent of non-irradiated farina, and with 10 per cent of irradiated farina. Both farinas were bought on the open market and the 10 per cent addition was considered comparable to the amount consumed by the average child in proportion to the diet. At the end of the test periods inorganic phosphorus and ash content of femurs were determined and roentgenograms taken. The results show the rats made good gains in weight, but those on the 10 per cent irradiated farina ration showed no increase in blood phosphorus, no increase in the ash-organic residue ratio of the femurs, and X-rays show no

increased calcification in femurs. The authors conclude that the claims made for this food by its sponsors are not justified.—Frederic W. Schlutz and Mildred R. Ziegler, *J. A. M. A.*, 93: 1466 (Nov. 9), 1929.

Whole-Meal Bread—This is a brief summary and conclusions of the facts surrounding the use of whole wheat bread in the diet.—Liebig first extolled the virtues of whole wheat bread, and since 1868 it has been advocated both in Europe and America. Liebig believed it to be easily digested and more beneficial, due to the inorganic salts in the outer layers of the grain. Later Rubner showed that the proteins of bran were not easily digested and only partly assimilated. Researches in Germany in 1897 led to the conclusion that this bread was uneconomical for the military organization.

Since the wheat embryo is rich in vitamin B, this is used as an additional argument for whole wheat bread, but it is pointed out that this applies to wheat and not to rye, since in the latter industry the embryo separates with the meal and not with the bran. Whole wheat bread is advocated for relief of constipation and to obviate obesity.

Despite the potency of the wheat embryo in vitamin B, it is pointed out that to prove that a deficiency of this is responsible for constipation it would be necessary to conduct controlled experiments, with the only modification in the diet being between white bread and whole wheat bread.

There is cited the work of E. Mellanby, who found a constituent of oatmeal and wheat embryo which tended to produce rickets by interfering with bone calcification. Comparing the analyses of whole wheat, white flour and bran, the conclusion is reached that white flour is a better source of energy than whole wheat. The latter contains indigestible cell membranes which in turn enclose proteins, and about 30 to 40 per cent of the material escapes digestion. Furthermore, vegetable proteins, due to the lack of amino acids, are not rated so high as animal proteins. On a white bread diet, the percentage of total food calories lost amounts to 8 as compared to 14 on a whole meal diet.

The question as to whether it is a national economy to use whole-meal bread depends on the efficiency of the milling of the by-products. It is held that the laxative effect of whole wheat bread does not differ from other laxative material and no advantage is gained compared to the use of white bread with other laxatives as needed. It is pointed out in advocating whole wheat bread that attention should be called to the fact that experiments have so far been conducted on animals and adult males. Children are intolerant of high cellulose diets and in some the whole wheat bread is definitely irritating.

Appetite is an important factor and to many the whole wheat bread is distasteful. The obvious conclusion is that caution should be exercised in advocating whole wheat bread, particularly in the case of women and children, until such time as unbiased, controlled experiments have indicated the justification for it.—Carbohydrate Content of Foods, by R. A. McCance and R. D. Lawrence, *Report of Medical Research Council*, London, 1929, p. 53.

PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

Why More County Nurses?—According to recent statistics country children are not so healthy as children who live in cities, and they have more physical defects. The strongest weapon to use in remedying this situation is the public health nurse. She is the missionary who can best carry the message of health into the homes and schools of America.

In one middle western state there is 1 public health nurse to every 5,092 of the urban population (that is counting the 69 industrial nurses), and 1 public health nurse to every 32,090 of the rural population, and this situation can be duplicated in any number of states.

In the *Missouri Public Health News* for November, 1929, the following reasons were given why every county in that state needs public health nurses:

1. Because 4,167 babies born last year died before they reached one year of age.
2. Because 206 young men and women died from tuberculosis last year. For every death, it is estimated that there were 10 new cases.
3. Because 406 mothers died last year from causes due to childbirth.
4. Because trachoma, a preventable disease, is the cause of blindness in one-third of Missouri's Blind Pensioners.
5. Because health examinations of Missouri school children show that 75 per cent of the children are suffering from one or more remediable physical defects.
6. Because many days of school were lost last year due to the prevalence of communicable disease. Unnecessary absentees waste the school funds.

In Missouri the average salary of a well-trained public health nurse is $1,800 a year, but this may and should vary from $1,500 to $2,200 per year, depending upon the preparation of the nurse and the length of time she has been in service. In addition to salary a travel allowance of from $35 to $60 a month is provided when she drives her own car. Counting the expense of office space, supplies and other incidental needs, the average cost of a public health nursing service for one year is about $2,800.—*Missouri Public Health News*, II, 46–48 (Nov.), 1929.

A Suggestion from California—It is not always recognized that an official public health nursing service frequently develops out of a service that an unofficial agency has fostered and supported until the people crave and demand it, and are willing to pay taxes for it. Oftener than not, too, the quality of the nursing service of the governmental agency depends upon the standard set by the unofficial agency which fostered the work in its experimental stage.

When an official agency does take over a nursing service, its responsibility for public health nursing in the community is not finished, but just begun, as the community health commissioner has a great opportunity open to him to stimulate the correlation of all the nursing services in the community. It is a pitiful sight to see a good sized city with several voluntary agencies carrying on nursing services, the nurses overlapping each other's work, sometimes not on speaking terms, and the city health commissioner perfectly satisfied because he employs a communicable disease nurse who goes into the homes to diagnose cases.

In contrast to this picture is the com-

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 126 State House Annex, Indianapolis, Ind.

munity whose health commissioner made arrangements to have all public health nursing agencies housed in the city hall, and was active in the amalgamation of the services. The following agencies still continued to contribute to the salaries of the nurses in this community:

The City Board of Health
The City Board of Education
The City Board of Supervisors
The American Red Cross
The State Tuberculosis Association
The Metropolitan Life Insurance Company

However, to assist in accomplishing this correlation there are the following practical considerations from the standpoint of the nurse in the field which were given by Helen S. Hartley, Public Health Nurse of Stockton, Calif., in a paper read before the Annual Conference of the California Health Officers League of California Municipalities in October:

1. An understanding health officer.
2. A supervising nurse to assist in interpreting policies and keeping the various activities balanced. Even where there are only two or three nurses, one should be assigned to this definite duty.
3. A central, workably good office from which and in which to work. The importance of being able to work comfortably in the office cannot be overestimated. Any person who has been rushing from one home to another, hearing the troubles of the people in her district, can not only work more happily, but can actually accomplish more work if given space at a comfortable desk with sufficient light and ventilation.
4. Coöperation fostered by those in charge of the budgets will fall like a mantle upon the staff, who will be chosen for their individual qualities rather than by any undue outside influence.

Helen S. Hartley, P.H.N., Health Office Direction and Coöperation, *Weekly Bull.*, Calif. State Dept. of Public Health, VIII, 42: 1 (Nov. 23), 1929.

Thirty Years of Nurses at Teachers College—The Thirtieth Anniversary of the founding of the Nursing Education Department at Teachers College, Columbia University, New York, N. Y., was celebrated there in October by a 2-day conference, during which much honor was paid to "four of the founders" of the department. These were Mary Adelaide Nutting, Emeritus Professor of Nursing Education, whom Dean Russel characterized as the "Mother of the Nursing Education Movement"; Mrs. Helen Hartley Jenkins, who by her generous endowment made possible the Nursing Education Department of Teachers College as we know it today; Lillian D. Wald, R.N., the founder of the Henry Street Settlement Nursing Service, who led Mrs. Jenkins, through her interest in the visiting nurse, to the broader field of nursing education in general; and Dr. James E. Russel, Dean Emeritus of Teachers College, who thirty years ago dared to admit the nursing profession to the college.

The high ideals set by these four founders are being ably upheld and developed under the direction of William Fletcher Russel, the present Dean of Teachers College, and Isabel Maitland Stewart, the present Professor of the Department of Nursing Education.—The Thirtieth Anniversary of the Nursing Education Department, Teachers College, New York, *Am. J. Nurs.*, XXIX, 12: 1521 (Dec.), 1929.

The Seattle Community Nursing Service—The Community Nursing Service of Seattle has been reorganized as a separate community corporation after 10 years of growth under the Seattle Chapter of the American Red Cross. The objective of this service is to supply skilled nursing care on a visit basis to people in their homes, under the direction of licensed physicians.

The nursing personnel of the Seattle Community Nursing Service at present consists of 8 staff nurses, a supervising nurse and a director, but it is hoped that within the next 10 years the staff will be increased to 125 nurses. The staff

nurses are chosen from those graduate registered nurses who have excellent training school records and who have had postgraduate training in public health nursing.

The service of these nurses is available to every home in Seattle, both to those who can afford to pay for such a service and to those who can pay little or nothing at all. The organization feels that the greatest usefulness of its service lies in bringing skilled nursing care to all families of moderate means who need only part-time nursing care in their homes and who do not want to be charity cases. The majority of this class in Seattle is the real backbone of the city life.—Seattle Community Nursing Service, *The Thermometer*, Washington State Dept. of Health, Division of Public Health Nursing and Child Hygiene, III, 2: 1 (Dec.), 1929.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

Holiday Greetings and Appeals—Many health house organs recognized the spirit of the holidays and some sought to express their message in terms of the season. *Alameda County Public Health News*, Oakland Public Health Center: Thanksgiving design in color. . . . *The Gleaner*, Texas Bureau of Child Hygiene: a mimeographed cover design, and a Christmas Eve poem. . . . *Missouri Public Health News*, State Board: a stock cut on first page. . . . *Alameda County Public Health News*, Oakland: colored cover design and a poem. . . . *Household Nutrition*, National Dairy Council: stock borders and ornaments and holiday helps for the housekeeper. . . . *Health Bulletin*, New Jersey Tuberculosis League: a smiling youngster on cover page presenting "Merry Christmas." . . . *Crusade Lance*, Tuberculosis Society of Detroit: a cover design with poem. . . . *Baltimore Health News*, Health Department: the A. P. H. A. holiday greeting page on the cover. . . . *Pennsylvania's Health*, State Department: editorial on "The Christmas Spirit" in terms of health, and "Keeping Christmas Merry" with timely suggestions about toys, accidents, etc. . . . *Bulletin*, Milwaukee Department: stock ornaments and a "greeting" on the cover. . . . *News Letter*, West Virginia State Department: mimeographed sketches, and "Santa's Dream" which carried good wishes to health workers. . . . *Public Safety*, National Safety Council: green Christmas trees on cover and "It's safer to do your shopping before the rush begins." . . . *Weekly Morbidity Report*, Connecticut State Department: accompanied by a green sheet, in color, with greetings and "Aid the Light of Knowledge into the Dark Corners of Your Community to Rout Superstition, Promote Public Health, Prevent Disease and Charge with Glorious Physical Well Being Through its Radiant Energy." . . . *Bulletin*, Allentown Bureau of Health: A. P. H. A. greeting page. . . . *Hoosier Health Herald*, State Tuberculosis Association: a holiday design on cover. . . . *Editor's Clip Sheet*, National Safety Council: special Christmas material. . . . *News Release* for December 31, Illinois State Department: proposal of a "Christmas health saving

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

club." . . . *Better Health,* Syracuse Department: the most pleasing of all—a silhouetted child, with greetings, also inside articles on "The Best Gift of All," and "Christmas Toys." . . . *Board of Health Bulletin,* Middletown, N. Y.: mimeographed "Merry Christmas" and a Santa. . . . *Monthly Bulletin,* New Haven, Conn.: 4 pages only, special envelope and paper, all Christmas material, in three colors, with cover design including a glorified diagram showing downward infant mortality trend, and health holiday greetings to parents and to children inside . . . several bulletins used the Christmas seal in outline . . . and of course the tuberculosis groups used much Christmas material . . . and the cancer societies . . . and money appeal letters utilized the Christmas motive. *The editor would welcome additional examples* to be included in a portfolio to be shown at Fort Worth.

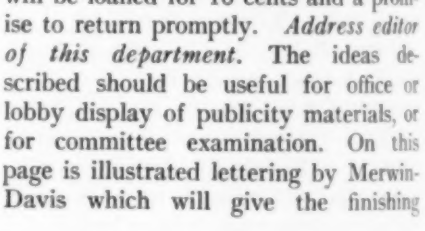
"Stock cuts" are ready-made halftones supplied by printers or by several firms which make them. "Stock ornaments" are from the varied selection available to printers who use the linotype, monotype, etc. Designs for the mimeograph may be copied or adopted from many sources.

Five Medical Societies Conduct a Joint Campaign—November, 1929, was "Health Examination Month" in New York City, but the campaign will continue less intensively throughout 1930. The Greater New York Committee on Health Examination was formed by the five county medical societies within the city; special funds were secured; and Dr. Iago Galdston of the New York Tuberculosis and Health Association was given executive direction of the effort. Posters, folders, special meetings, addresses before ready-made audiences, radio talks, letters to ministers, mention in department store advertisements, paid advertising space in morning newspapers, a mayor's proclamation, and an essay contest in high schools, are elements of the campaign. For samples of the printed matter address Dr. Iago Galdston, 244 Madison Ave., New York, N. Y.

On Convention Programs—West Virginia Public Health Association: "The Newspaper in Its Relation to Public Health," by George Anderson.

Texas Sanitarian's Short School: "Health Aspects of Public Interest," by Dr. F. L. Hoffman; "Some Methods of Projecting Intensive Health Education," by Dr. R. J. Stroud, with discussion by Dr. W. W. Peter; Milk Playlet by School Children.

Publicity Portfolios for Conventions—The problem: how to put up, attractively and conveniently for examination, a collection of publicity materials of varied sizes, shapes, colors, etc. The solution so far as we have worked it out is explained in a memorandum which will be sent upon request. Samples to illustrate two forms of portfolio will be loaned for 10 cents and a promise to return promptly. *Address editor of this department.* The ideas described should be useful for office or lobby display of publicity materials, or for committee examination. On this page is illustrated lettering by Merwin-Davis which will give the finishing



touch to the portfolios. This lettering appeared on colored posters 3 by 6 inches as described in the memorandum mentioned above.

This is the symbol for the tuberculosis educational campaign, with the slogan, "Protect them from tuberculosis."

Special pictures and leaflets for Negro groups will be illustrated with this symbol.

A Nation-Wide Publicity Campaign—The spring publicity campaign of tuberculosis associations of the United States will, in April, 1930, be concerned with the childhood type of tuberculosis. Its purpose will be to tell adults responsible for the welfare of children that by the use of certain special but simple diagnostic procedures tuberculosis in its "seedling" stage, and before the appearance of symptoms, can be discovered.

The first united publicity effort of this kind was in 1928, when by means of a bludgeon blow, "*You* May Have Tuberculosis," an attempt was made to arouse the public out of its lethargy. The following year, the message was more gentle and optimistic, centering about the slogan, "Early Discovery, Early Recovery—Let Your Doctor Decide." The time seems right, therefore, to concentrate attention on a method of anticipating the disease in children and providing safeguards designed to prevent its development into pulmonary tuberculosis, or old-fashioned consumption.

The campaign is sponsored by the National Conference of Tuberculosis Secretaries, under the leadership of the National Tuberculosis Association. As some of the facts about the childhood type of tuberculosis are still in controversy, much effort was expended by clinicians (called in for the purpose more than a year in advance of the campaign) so to frame the message as to be truthful and at the same time understandable and pragmatical. The subject, childhood tuberculosis, gives opportunity to revive the old story of tuberculosis prevention from a fresh aspect and to give publicity to the results of several significant research studies now under way.

Production of the materials began in the summer of 1929, and samples were in the hands of state and local associations by November. These include a brief leaflet for parents and a more extensive treatment of the subject in a 16-page illustrated booklet, bearing the title, "Do Children Have Tuberculosis?" designed for the intelligent parent and teacher, an illustrated manual on the diagnosis of childhood tuberculosis for physicians, a 24-sheet billboard poster, smaller posters of various sizes, lecture slides, electrotypes, and a mo-

tion picture produced by Eastman Teaching Films. The emblem or symbol of the campaign will be the portrait of an attractive child. The slogan is, "Protect Them from Tuberculosis," supplemented by:

Keep them away from sick people.
Insist on plenty of rest.
Train them in health habits.
Consult the doctor regularly.

A special feature for this year will be the leaflets and posters for Negroes, which are the same as the others in text but illustrated with the head of a Negro child.

Each state will organize its own campaign, just as it does the Christmas seal sale. The National Tuberculosis Association supplements this with national publicity. The Metropolitan Life Insurance Company will again devote its usual advertising page, which reaches potentially 21 million people, to an illustrated treatise on childhood tuberculosis. Contacts will be made with national headquarters of fraternal organizations, insurance companies, women's clubs, etc. Articles and cuts will be offered house organs and trade journals, and a series of syndicated newspaper articles will be offered for release.

Last year, the National Tuberculosis Association prepared more than 6 million pieces of literature, 116 reels of motion pictures and 830 electrotypes. This was supplemented by additional material produced by state and local associations, by 1 million special leaflets prepared by John Hancock Life Insurance Company, and by other publicity features. Demands for literature from insurance and fraternal organizations greatly exceeded the ability of the National Tuberculosis Association to furnish the materials requested. No effort was spared, of course, to enlist the coöperation of health departments, schools and civic organizations.

Actual results of previous campaigns defy exact measurement. While the amount of materials distributed, the number of lectures given, the amount of newspaper space secured, and so on, can be measured, these give no indication as to the desired end results in terms of the number of people who were persuaded to "let the doctor decide." Samplings of certain localities showed that clinic attendance and sanatorium applications were increased, and private physicians reported an increased number of patients desiring to know whether or not they might have tuberculosis. But the sum total of information conveyed or action stimulated is elusive. A device for measuring the results of an otherwise ordinary and calculated publicity campaign will probably prove to be the weakness of this effort as it was in previous ones; therefore, suggestions are eagerly invited.—H. E. Kleinschmidt, M.D.

The President Believes in Health Education—An extract from the health section of President Hoover's annual message to Congress, December 2, 1929:

The organization of preventive measures and health education in its personal application is the province of public health service. Such organization should be as universal as public education. Its support is a proper burden upon the taxpayer. It cannot be organized with success, either in its sanitary or educational phases, except upon public authority. It should be based upon local and state responsibility, but I consider that the Federal Government has an obligation of contribution to the establishment of such agencies.

Offered to Professional Public Health Schools—The two-session program at the Chicago A. P. H. A. meeting on "A Health Education and Publicity Program" seems to offer material of value in the teaching of public health. Reprints have been provided by the Department of Surveys and Exhibits, Russell Sage Foundation, 130 East 22d St., New York, N. Y. Copies have been of-

fered to public health and social work training schools for free distribution to all students of public health administration or other subjects where the reprint would be useful.

The reprint includes the following: "Why Have a Plan?"—Mary Swain Routzahn; "Objectives of Publicity—On What Basis Are They Selected?"—Howard W. Green; "Audiences—How to Select and Classify Them"—Marjorie Delevan (May, 1929); "The Facts—How to Decide What Is to Be Told"—C.-E. A. Winslow; "The Approach—How to Decide on the Motives for Conduct to Which an Appeal Will Be Made"—Franklin Fearing (June, 1929)—*A. J. P. H.*

A Prerequisite to Effective Publicity—

We are urged not to forget that the final test of public information is that as a result of being informed or convinced individuals act in quite specific ways. The speaker or writer who has these objectives clearly in mind is less likely to wander from the point or indulge in wordy generalizations. It seems probable that educational programs would have more vitality and a closer relation to the thinking of everyday human beings if those who planned them were fully aware of the individual responses necessary to make broad programs come true. If each effort of publicity were tested by the question "What effect should this have on the behavior of those who are exposed to it?" much writing, speaking and graphic presentation of ideas would be revised to become more simple, direct and practical in content.—From "The Aims of Social Hygiene Publicity," by Mary Swain Routzahn, *J. Social Hyg.*, Feb., 1929.

Diphtheria "Talkie" Trailers— For several years the baffling problem of motion picture distribution has been met by the New York State Health Department through the use of trailers, pictures running approximately two minutes which a considerable proportion of theatre owners are willing to run in the regular programs.

This same possibility appealed to the Diphtheria Prevention Commission of the New York City Department of Health. The first production was a 300-foot "talkie" trailer in which Health Commissioner Wynne was presented delivering a talk on diphtheria of 575 words. The 50 prints were distributed from the executive offices of the theatre circuits to practically all houses in the city equipped for sound pictures.

Later four silent trailers, each about 125 feet and running a minute and a half, were put into circulation. Here are the four messages:

A message from Commissioner Wynne himself. He invites us into his office, where we watch him write it. Then we see a group of happy kiddies whom he is calling upon us to protect.

Happy, healthy children playing in the snow outside. Jolly Jack Frost comes a-jumping into the house and on the frost-flowered window pane writes an important message with an icicle point.

East side, west side, all around the town, children playing merrily excepting one little sick child who watches them from her window until her view is cut off by a timely message.

In a beautiful flower garden surrounding a pond of water-lilies (this subject is in color), we see a group of pretty children pointing to a message in the rippling water at their feet.

For a copy of the letter describing the four trailers to theatre managers and of Commissioner Wynne's talk, address the Commission at 505 Pearl St., New York, N. Y.

Headline Producing Copy—News releases containing material for headlines that will attract the attention of newspaper readers are illustrated in the following extracts from the output of the Illinois State Department of Public Health:

Dec. 4: Detecting crime among the germ population by the finger print method is now a major function of the State Department of

Health. No less than 354 examinations of this kind are done daily and 17 per cent show evidence of guilt. These facts are disclosed in the annual report of Dr. Andy Hall, State Health Director, which was handed to the Governor here this week. It showed that the laboratory, referred to as the finger print bureau, did 129,296 tests during the last fiscal year and that 22,421 incriminated numerous bacteria bent upon the destruction of people all over the state. Specimens reached the laboratory from every county in the state ranging in number from 3 for Edwards to 12,624 for Kane. . . .

Dec. 11: With contagious diseases now sending more than a thousand school children to bed weekly in Illinois Dr. Andy Hall, State Health Director, declared here today that absence from the classrooms is a medical rather than a disciplinary problem and recommended the employment of nurses as truant officers. Carefully kept records disclose that fully 90 per cent of absenteeism in the schools is due to illness of one sort or another and that efficient health service will reduce considerably the amount of sickness in the school population. "The six diseases of smallpox, measles, scarlet fever, whooping cough, diphtheria and chicken pox are now causing 2,000 fresh cases of illness weekly in Illinois and no less than one-half of the cases are among children of school age. All are quarantinable and cause extended absence from school. . . .

Dec. 18: Comparing the person who refuses or neglects to report a case of contagious disease to "hit-and-run" motor car drivers who fail to report accidents, Dr. Andy Hall, State Health Director, announced here today that a new national system of communicable disease notification is in process of organization by the federal government and that Illinois has applied for admission. Every case of communicable disease must be reported to Washington under the new system, which is a voluntary enterprise, but states where reports are seriously incomplete and delinquent will be left outside the new registration area. "Increasing travel tends to multiply enormously the opportunity of spreading contagious disease," said Dr. Hall. "As transportation facilities increase in speed and comfort this danger increases because individuals with mild attacks or in the incubation period are more apt to attempt journeys which promise quick and easy passage." . . .

Dec. 26: With mortality rates, barometer of winter health conditions, duplicating almost exactly their behavior of this season last year, Dr. Andy Hall, State Health Director, expressed here today the fear that a return wave of influenza is in the making. Case reports of pneumonia which have jumped from 225 to 350 per week within a month suggest the same possibility. The tendency of influenza to travel in waves of 33-week periods makes another epidemic due in Illinois toward the end of February. "A sharp rise in the death rate at this time of year, especially if it includes a significant increase in deaths from pneumonia, suggests the possibility of influenza". . .

The quotations above show one-third or more of each release. *Copies free.*

BELIEVE IT, OR NOT

Many state and local health reports have neither a table of contents nor an **index!**

An important city health agency report includes 91 headings—without index or table of contents—and many of the headings refer to topics not to be expected in a health report!

A few annual reports of nonofficial agencies do not carry the name of the city unless, possibly, it is buried incidentally somewhere in the text!

NEW PUBLICATION

After 10 or 11 years the *Railroad Man's Magazine* (280 Broadway, New York, N. Y.) has been resumed by the Munsey organization—probably an opportunity for national agencies and others with health information which should appeal to this particular audience.

WORDS

Every man is a dictionary, and his definition of words is ruled by his education and experiences.—From Goblin Market by H. de Vere Stackpoole.

When you wish to say that it is raining, say "It rains."—Credited by *Advertising and Selling* to Boileau in L'Art Poetique.

BOOKS AND REPORTS

Microbiology—*By Benjamin Franklin Lutman. New York: McGraw-Hill,* 1929. 459 pp. Price, $4.00.

Among the many books on microbiology written by non-medical men, this is one of the best. As long as the author sticks to his own subject, his material is excellent, but when he wanders into the domain of medicine, he is out of his element, and makes statements which are not in accordance with facts.

Some of his quotations are deplorably old. In discussing tuberculosis, for example, he gives material published in 1911, and there are a number of other references equally ancient. Just why a book of this type should consider the cure of tuberculosis is hard to understand. In discussing other diseases there is a similar lack of exactness. The discovery of diphtheria antitoxin is credited to Roux and Martin. Von Behring is not even mentioned, though he had priority in the work. Anthrax vaccine is spoken of as "serum." In the Schick Test we are told to inject "two cubic centimeters of a dilution of diphtheria toxin under the skin of the arm"—advice which is wrong from every standpoint and, if followed, might lead to severe injury or death.

The illustrations are good and abundant. The printing is good for the most part, but there seems no excuse for the misspelling of such well known proper names as Vaughan, and none for putting Koch ahead of Pasteur in credit for establishing the relation of germs to disease. If the medical discussions had been omitted, the book would be very much better. The fondness of non-medical men for discussing medical subjects is not to be commended. Apart from these the book is good. A little learning is a dangerous thing. M. P. RAVENEL

An Adventure with Children—*By Mary H. Lewis. New York: Macmillan,* 1929. 250 pp. Price, $1.75.

This is an adventure of a dozen or so years' duration in which the author conducted a "school" (perhaps this word has too many hidebound connotations—maybe we should say, "conducted the lives of children") according to progressive principles. Besides its interesting material the book holds one's attention because of its style and because we feel the constant influence of the author's enthusiasm.

The basic principle upon which the school was conducted, "do" rather than "don't," prevails in the writing of this book. It is the opposite of the "Uncle Tom's Cabin" or "don't" type. It makes little reference to the condition which is being met, but presents the solution.

In reading this account one can but be aware of the dynamic rôle of the leader whether it be in molding the opinion of a board of trustees, in raising money, in persuading parents to submit their children to an experiment, stimulating a group of teachers, or in dealing directly with the children. The great value of this forcefulness is apparent in the rapid development of the school. Its weakness appears in the panic of insecurity which caused the school to retrench when its leader was taken sick. So much of the personal enters into this adventure that one would not be satisfied that he understands it without knowing considerable of the life history of the author. Per-

haps therein would be found the basis of that ability so to identify herself with others, particularly children, that she was able to understand the other's point of view and act upon his need.

GEORGE S. STEVENSON

The Essentials of Healthy Living—*By J. Mace Andress, Ph.D., and I. H. Goldberger, M.D. New York: Jennings Publishing Co.*, 1929. 29 pp. Price, $.20.

This small pamphlet sticks close to its text of "essentials" and as a result, although briefly done and largely in outline form, the whole basis for health building is here set forth in simple, direct, comprehensive form. At the same time the writers have managed to give the whole story a live interest that is as rare as it is commendable in this sort of a text. While not "written down" for the lay mind or even for school use, it is evidently prepared with a good understanding of how to reach both forcibly with good substantial information on how to keep well and increase health.

LENNA L. MEANES

Hookworm Disease—Its Distribution, Biology, Epidemiology, Pathology, Diagnosis, Treatment and Control—*By Asa C. Chandler, M.Sc., Ph.D. New York: Macmillan*, 1929. 494 pp. Price, $5.00.

The interest of Americans in hookworm disease dates from the work of Ashford in Porto Rico in 1900, and Stiles in 1901, the latter of whom succeeded in gaining the attention of John D. Rockefeller, which resulted in the foundation of a Sanitary Commission in 1909. As said in 1917 by the International Health Board, the disease is never spectacular like yellow fever or pernicious malaria, and for this reason is the greater menace. It has also been said, "as a world producer of death (often indirectly), of incapacity, and of misery, it is second to none, unless it be to malaria." Further, the infection is practically universal as well as ancient of origin. The present author is of the opinion that the "āāā" disease of the ancient Egyptians was predominantly due to hookworm, though probably other infections were included.

The book consists of 10 chapters beginning with a historical introduction and taking up in turn every phase of hookworm disease including: Geographical Distribution, Zoölogical Relationships of the Worms, Epidemiology, Pathology, Diagnosis, Treatment and Prevention.

An appendix in 12 sections gives technical methods with comments on them. This is especially valuable since the most important contributions to our knowledge within the last decade have been due to the development of new research methods in the hands of skilled workers.

The historical chapter is extremely interesting, and complete enough for the average reader. The other sections will interest workers according to the particular lines in which they are engaged. An enormous amount of biological material has been accumulated in the study of this group of parasites, but this is important also from the public health standpoint. While control of the disease would appear to be easy theoretically, it is not actually so in practice.

The author spent more than 3 years in India in full-time research on the various problems involving hookworm and hookworm disease. He covered all phases of the subject, and writes from personal knowledge as well as an extensive study of the work of others. Needless to say, this experience was invaluable, made especially so by his former experience as a teacher and well known writer on biological subjects. The author states that in spite of the importance of hookworm and the attention which is being given to its control by the medical profession as well as gov-

ernments in practically all tropical and subtropical parts of the world, no book nor comprehensive summary of our knowledge on the disease has appeared since 1913.

The volume ends with an excellent bibliography which does not pretend to be complete, but is more than sufficient for the average reader, and an excellent index.

The book is well printed and illustrated, and must be regarded as a most important contribution, not only for research workers, but for general practitioners, especially those in tropical climates. It is written in the clear style characteristic of the author.

M. P. RAVENEL

Clinical Medicine for Nurses (*3d ed.*)—*By Paul H. Ringer, M.D. Philadelphia: Davis,* 1929. 330 pp. Price, $3.00.

This book is a collection of lectures on the commoner medical diseases, prepared for and delivered to nurses. The lectures give detailed descriptions of the points in the diseases that the nurse is expected to observe and interpret. These points dwell upon symptoms and their meanings, also upon complications and their detection.

The subject matter is up-to-date, and practical. It is arranged in outline form whenever possible.

Dr. Ringer apparently has known nurses a long time for he seems to be able to sense the nursing problems connected with the various diseases. His suggestions concerning the care of the patient are valuable to the public health nurse as well as the institutional nurse.

EDWINA MACDOUGALL

Proceedings of the Third Annual Conference of the Maryland Water and Sewerage Association, Salisbury, Maryland, 1929—The transactions of the third annual conference of the Maryland Water and Sewerage Association contains 12 papers on a variety of subjects. Many of the papers are followed by discussions. The subject matter covers water and sewer systems and their construction, pumps for and pumping of both water and sewage, well water supplies and two specific types of wells, water purification, landscaping and aerial surveys, treatment of a trade waste and a typhoid fever outbreak.

The relation of aerial surveys to municipal improvements is brought out in an interesting way in one paper. Although the information therein may be valuable to many classes of public officials, it also has particular significance to those engaged in major water and sewerage projects.

ARTHUR P. MILLER

Medical Information in Sickness and Health—*By Philip Skrainka, M.D. With a foreword by W. A. Newman Dorland, M.D., F.A.C.S. New York: Coward-McCann,* 1929. 577 pp. Price, $7.50.

Not many years ago books with such titles as "The Family Physician" or "The Household Doctor" were found in almost every home, especially in the country districts and the South, where the plantation owner was called upon for first aid to his laborers. There is no doubt that such books, when they were well written by responsible physicians, served a useful purpose.

The volume before us is of somewhat the same general character, and contains much material which is well put and sane. It goes somewhat further than the older ones in discussing to a certain extent social medicine, health and disease, and in exposing the fallacies of current medical fads. A valuable feature is the advice concerning prevention and home nursing.

Whether such a work has a place in our present-day society may be open to discussion. Early life on a cotton

plantation in the South, miles away from the nearest physician, has left in the mind of the reviewer a belief that a book of this kind may still serve a useful purpose. Accepting this as a fact, the work of Dr. Skrainka can be recommended. It is more sound and reliable than most of the general class to which it belongs. M. P. RAVENEL

The Science of Nutrition Simplified. *A Popular Introduction to Dietetics —By D. D. Rosewarne, M.R.C.S., L.R.C.P. St. Louis: Mosby,* 1929. 314 pp. Price, $3.50.

In the profusion of books on nutrition this one has the distinction of being scientifically sound and free from faddism. It is a straightforward, unembellished account of modern dietary principles. No one can complain about its accuracy, but a popular book needs a little more than that to make it appealing to the lay reader. This book lacks color in its style, though not in its cover, which is a jaundiced looking affair. It is well printed, with large type on good paper, and has an index. Anyone who wants a simple and trustworthy, if not tremendously inspiring, book on nutrition will find this one of value.

JAMES A. TOBEY

Nature Study and Health Education *—By Alice Jean Patterson. Normal, Ill.: McKnight and McKnight. 5 Vol.* Price, $.80–$.96.

Health habit training is pleasingly woven into nature study in this series of school books. The first volume simplifies the problems of the teacher of the first and second grades by giving her definite lesson units. Health workers will welcome the use of these publications, for they will tend to stimulate instruction in hygiene.

Hygienists may question some of the proposals. For instance, the suggestion that the school teacher make the health examinations " in schools where there is no nurse or physician," might lead to complications. It would seem that the same methods utilized to make nature study absorbing to the youngsters might have been used to more effect in health habit training. Tooth brush drills, health rhyme chanting, admonitions to eat spinach seem uninspiring compared to the fun to be had in keeping a balanced aquarium.

The volumes are written in appropriately simple language and printed in large type so that they can be read by the pupils of the progressive grades as class room exercises. Each succeeds in reaching the interest level of the class intended in so far as nature study is concerned. There is not an equally well planned progressive appeal to the health interest. The same ten health habits crop up each year. It would seem that by the sixth grade the children would fairly groan at the repetition of " 1. Clean persons—hands, nails, face, ears "—and so on for the entire ten.

The merit of combining so effectively these two subjects, thus simplifying teaching schedules, far outweighs occasional criticisms of content, which as a whole is excellent.

RAYMOND S. PATTERSON

Medical Leaders. From Hippocrates to Osler—*By Samuel W. Lambert, M.D., and George M. Goodwin, M.D. Indianapolis: Bobbs-Merrill,* 1929. 331 pp. Ill. Price, $5.00.

The authors have given us a readable and valuable contribution to the history of medicine. They have adopted the method of dividing history according to the various phases of development, and under these, considering some of the great figures who have had much to do with the development of the science.

The selections they have made are good as far as they go, and the facts correct. While one must naturally

grant to writers some freedom in the selection of their heroes, notable omissions open them to criticism. Auenbrugger and Laennec are justly included in the sketches, but one looks in vain for the name of Villemin, who first showed us that tuberculosis was communicable, and that the various types were all manifestations of the same pathological process. Surely he deserves a place in a book on Medical Leaders.

The weakest part of the book is that devoted to the modern period, in which there are a number of incomplete and unsatisfying statements, as well as actual errors. It is stated that Agramonte was given yellow fever by the bites of mosquitoes, and recovered. All available authorities state—what the reviewer believes of his own knowledge to be correct—that Agramonte was an immune.

The book is well printed, and can be commended to the average physician and reader who does not care to delve too deeply into medical history.

M. P. RAVENEL

Creative Activities in Physical Education—*By Olive K. Horrigan. New York: A. S. Barnes and Co.,* 1929. 405 pp. Price, $2.00.

This book is a timely contribution to the present trend in education to correlate various units of study in the minds of children. Physical education, which has been to many merely a means of developing the physical well-being of the child, is here made a means to an end of vivifying poetry, music, history, and manners and customs of world peoples. At the same time, the primary function of physical education is kept steadily in mind and its value emphasized because of the self expression and bodily control developed in these new avenues of its application.

The classroom teacher is kept in mind also and is given excellent material in verse, music, and directions for dancing and games, as a basis for trying out each of the suggestions offered. In addition, very comprehensive references are given in each connection. The whole book is made attractive by clearness, practical understanding of the teacher's problems, and a delightful sympathy with a child's imagination.

LENNA L. MEANES

Health. What Everyone Ought to Know—*By Oliver T. Osborne, M.D. Baltimore: Charles C. Thomas,*.1929. Price, $2.50.

This book belongs to the better class of those which have been written in such numbers during the last few years for the instruction of the public. It goes somewhat into physiology, and takes up nutrition, growth, foods, clothing, exercise, etc. The ground is well covered, and in an exceptionally clear fashion. It does not go into the treatment of disease, though general advice is given concerning first aid and simple care of some of the skin eruptions. The sections on the selection of a physician and on quackery are good.

There are a few mistakes, such as crediting the isolation of cocaine to an American chemist; and omissions, such as a discussion of alcohol, which is especially noticeable since there is a special chapter devoted to habits in which the narcotics are well handled.

The jacket gives a list of questions designed to direct the reader's attention to important subjects. There are no illustrations, but there is a very good index.

The book comes from the new publishing house of Charles C. Thomas, and its make-up deserves more than passing mention. On the page following the index, we are given the history of the printing, design of cover, name of the type and the paper. It is a delight to read a book so well gotten up.

M. P. RAVENEL

Three Minute Medicine. *A Series of Brief Essays on Popular Medicine—By Louis R. Effler, M.D. Boston: Badger,* 1929. 453 pp. Price, $3.00.

This volume, which may be called "Tabloid Medicine" (no disparagement intended), is the outcome of an editorial in the *Saturday Evening Post,* which charged that while physicians were alive to the educative powers of the press, they did not know how to use it, or to express themselves in the racy English which was needed. The Toledo Academy of Medicine responded to this by appointing an Education Committee, and through its work there was created a daily medical column in the *Toledo Times* printed on the editorial page under the heading "Said by Toledo Doctors." The Academy of Medicine has thereby sponsored the material in this book.

Some 200 subjects are considered, running all the way from short biographies of the fathers of medicine down to halitosis. Some 25 papers give "Anecdotes and Curiosities." The articles average about 400 words.

The book is eminently entertaining, and the facts in the main are sound, though the ideas expressed in some of the articles, "Ptomaine Poisoning," for example, are out of date and incomplete. The truth is told about medical fads and superstitions. Controversial matters, such as credit for the discovery of ether anesthesia, are fairly stated. This interesting experiment we judge has been entirely successful so far, and we wish it could be extended to every city in the United States. The printing and make-up of the book are excellent, the paper light, and we hope for it a large circulation. Even doctors will find many interesting anecdotes unknown to many.

M. P. RAVENEL

Pathogenic Microörganisms. *A Practical Manual for Students, Physicians, and Health Officers—By William H. Park, M.D., Anna W. Williams, M.D., and Charles Krumwiede, M.D. (9th ed. rev.). Philadelphia: Lea and Febiger,* 1929. 819 pp. Price, $6.50.

A book which has gone through nine editions has proved its value. In the present instance the authors have continued to add new material as it became available, bringing the text up to date.

In the sixth edition the practical application of serums and vaccines was transferred to a special section, known as Part III. In the present edition the earlier arrangement, which placed the practical application of our knowledge under the individual diseases, has been returned to, which, in our judgment, is a distinct improvement.

The new work on streptococci, yellow fever, and other subjects has been included, and there is a section on the use of BCG by the mouth in the immunization of children against tuberculosis. The newer precipitin tests are also included and discussed.

There are some peculiar statements, as on page 696, where we are told that the *Aëdes egypti* (properly aegypti) has been found as far north as Charleston, S. C. As it has been abundantly proved that in this country, at least, this mosquito is the only means by which the disease is transmitted, one cannot help wondering as to the origin of the epidemics in Wilmington, Norfolk, and even Philadelphia.

The book is well printed and put together, though there are still some errors in the index and elsewhere. Altogether we consider it the most useful single volume for students.

M. P. RAVENEL

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Nebraska—The object of Nebraska's recently organized Public Health Association is to "protect and promote public health by the closer correlation of all health activities, fostering and supporting constructive legislation, and aiding in the dissemination of correct information with regard to public health." The work of the State Bureau of Health is organized under four divisions: vital statistics, child hygiene, venereal diseases, and laboratories—each with its own director.

Heart disease with 1,840 deaths leads the list of causes of death, with cerebral hemorrhage and apoplexy (1,266) and cancer, all forms (1,257), following.

One of several amendments to the vital statistics statute by the 1927 Legislature authorizes the State Department of Public Welfare to make a charge of 50 cents for a certified copy of the record of a birth, death, marriage or divorce. At the request of any parent or guardian a certificate giving information relative to parentage and date of birth is furnished free of charge for school purposes or for securing employment.

Health schools for women were held in 36 communities, giving 4 lessons each in prenatal, infant and child care, and in prevention and control of disease. Eighteen groups of high school girls received instruction in 4 lessons on infant and child care. Lesson outlines and bulletins added value to this instruction. During the biennium there were 156 Child Health Conferences, in which 5,514 children were given a complete physical examination, with 13,094 remediable defects found. A total sum of $221,635.99 was paid in mothers' pensions by 89 of the 93 counties in the state during 1927. This money was distributed among 1,173 mothers and involved 3,322 children.

At the request of the secretary of the Department of Public Welfare, a 3-month survey was made to show the needs of juvenile court and probation development, especially in the rural counties of the state, and to stimulate local interest in the extension of these agencies. A recommendation for County Welfare Boards, with one trained worker in the smaller counties, seems the only way to obtain satisfactory probation service and to cover other important welfare needs. An educational campaign, to be carried on by the Child Welfare Division of the State Department of Public Welfare, is suggested to impress upon the respective communities the responsibility which they have toward their youth and their families who need help.

Readable Reports—No longer are annual health department reports confined to mere tabulations of births, deaths, marriages, and a statistical record of accomplishments during the year, with but meager, if any, interpretive comments upon the material presented. With communities becoming more and more health-minded, health officers have adopted modern publicity methods in report writing and are finding their clear and business like reports in great demand.

Graphic and pictorial presentation of the development of activities and the trend of mortality rates become effective tools by which the health officer acquaints the public with happenings in the field of public health. "Palo Alto Public Health Milestones" aptly illustrates the newer method of charting the growth of health work in a city. Any

number of interesting variations of this method might be worked out by health administrators and used advantageously in an annual report or other health education publications.

Health education is relatively new as a recognized health department activity, and the annual report offers an excellent opportunity for community education concerning the work of the department as a whole.

Analyzing health facts and discussing them in language that can be readily understood by the layman as well as the professional, now becomes a necessity. Business groups, keenly alive to the economics of public health work, and seeking convincing evidence of progress in the reduction of death rates from preventable causes, are impressed with diagrams showing the decline in typhoid deaths after the installation of a safe water supply or the adoption of a sound milk ordinance. Similarly, the value of diphtheria immunization work becomes an established fact upon the presentation of charts showing the death rate from diphtheria before and after immunization campaigns began.

The 1928 annual report of "Public Health in Cattaraugus County, N. Y." is one of several excellent examples of a "readable report." Well printed, with sufficient illustrations and diagrams, with just the proper amount of tabular material and with chapter headings and sub-headings that have a popular appeal, this report serves the purpose of education as well as a chronicle of activities and accomplishments during 1928. Its style deserves imitation.

Illustration used in the 1927 Palo Alto Annual Health Department Report, and reprinted in *Health Officers' News Letter*, A. P. H. A., 4, 11 (Nov. 22), 1929.

Cattaraugus County, N. Y.—The roll of honor of health reports for 1928 will include that of Cattaraugus County. The report is characterized by careful preparation and editing, excellent arrangement, with headings and sub-headings, good printing in readable type, attractive illustrations, with charts, graphs, and photographs accompanied by interesting descriptive text.

There are 3 distinct autonomous groups together representing a coöperative county effort to promote public health work. These groups include the official county department of health, including local health officers; the official county agency for health supervision of school children; and the local voluntary health agencies in various parts of the county. There are 73 physicians and 36 dentists for an estimated population of 72,851.

Bureaus that have functioned within the county unit as a part of the health department include the Bureau of Tuberculosis, with a medical director; the county laboratory, with a medical director, 3 technicians and 2 laboratory workers; the Bureau of Public Health Nursing, with a director, an educational director, a social service consultant and 14 staff nurses; and the Bureau of Maternal, Infant and Child Hygiene, with a medical director. The Bureau of Statistics has a statistician in charge. In addition, there were 6 stenographers and clerks and a sanitary inspector on the staff, beside the full-time medical health officer. The budget for the year amounted to $108,000, of which $56,000 was from county and state funds and $52,000 from the Milbank Memorial Fund.

This county reports a birth rate of 18.5, about one-third of the births occurring in hospitals. A death rate of 13.8 and an infant mortality rate of 70 are recorded. Of 97 infant deaths, 68 occurred before the infant was a month old. There were 21 cases of diphtheria, with 1 death. The parents of the family where the fatal case occurred had been urged by the public health nurse to

have toxin-antitoxin for the children, but, as in so many cases, the matter had been put off because diphtheria was not present at the time. There were 35 deaths from tuberculosis during the year, giving a specific rate of 47 as compared with a rate of 76 in 1918.

Health education, according to the report, is effectively extended from neighbor to neighbor as a result of personal contact with some branch of the county health service, as well as by more formal means. Members of the staff gave 135 addresses to groups numbering 5,600 people, while newspapers published over 8,700 health articles.

Milwaukee, Wis.—One of the 10 chapters of the 1928 report of municipal government and activities of the City of Milwaukee deals with public health. This city of approximately 550,000 people reports a birth rate of 22.3 per 1,000 population, a death rate of 10.9, and an infant mortality rate of 70 per 1,000 living births. Of the 846 infant deaths during the year, 477 or over one-half occurred during the first 30 days of life. To decrease this infant mortality rate it is suggested that a more intensive prenatal program be put into effect.

Several new full-time positions were created during the year. Milwaukee now employs a full-time director of health education who develops the publicity and educational work through the four divisions of news material, lectures, publications, and exhibits. Other full-time positions include the home nursing instructor, the nutrition instructor, and the instructor in social hygiene. The budget of the health department, apart from the amount appropriated for the maintenance of South View hospital, allows 90 cents per capita for preventive health work.

One of the most gratifying accomplishments in the health field in Milwaukee during 1928 was the reduction in both diphtheria case and death rates from 757 cases with 56 deaths for 1927 to 382 cases with 35 deaths in 1928. On the other hand, epidemics of influenza and pneumonia were more serious in this city during 1928 than any year since 1918.

A total of 29,756 visits, of which 758 were school children and 17,197 well babies, was made at the child welfare clinics during the year, as compared with 25,679 in 1927. In these clinics, toxin-antitoxin was administered to 3,532 children; while 788 were vaccinated, and 2,165 had complete physical examinations. Physical examinations of 62,011 school children were made by school physicians. Defects found numbered 55,976 and 22,556 corrections of these defects were recommended. The nurses of the child welfare division made 56,979 child welfare calls during the year; of these, 13,335 were upon preschool children. Preschool activities advanced greatly during 1928, when 4,304 preschool children visited the clinics, an increase of 1,295 over last year.

R. E. W.

Los Angeles, Calif.—The health officer's report for the year ending June 30, 1929, contains a table of contents at the front and an alphabetical index at the back. The following significant statements appear in a letter of transmittal.

> The effectiveness of the health officer's work is increased or diminished by the attitude, knowledge and sympathies of his Board of Commissioners. It is essential that health commissioners be men of broad human sympathy with a real interest in the problems of the wage earner and the poor. They must be men who understand and believe thoroughly in the principles and practices of public health as taught and laid down by the American Public Health Association and the U. S. Public Health Service, for it is according to these principles and regulations that the health officer must work.

This city of an estimated population of 1,350,000 reports an average death rate for the last 5 years of 10.47 and an

infant mortality rate of 63.2. A chart showing the distribution of the tax rate for the year indicates an allotment of $.27 for police work, $.188 for fire protection, $.07 for library and $.028 for health. The leading causes of death are heart disease (2,403), cancer (1,453), tuberculosis (1,395), and nephritis (1,245). The report is well illustrated with photographs, charts and tables.

National Sanitarium Association of Toronto—The 1928–1929 report indicates that the hospital for consumptives and the cottage sanatorium operated by the association cared last year for 1,448 cases, for whose maintenance was expended $687,000. To offset this expenditure, there was received $570,000 from government grants, municipal allowances and from patients. The radio continues to be a valuable means of entertainment, about 90 per cent of the patients having head sets. The radio is operated between 6 and 10 each evening, and at other times for special broadcasts.

It has been found that the school department of the hospital fills an important place as the children are interested in school work, and considering the short hours, commendable progress is made. The city public school curriculum is followed closely, the only difference being that more time is given in the hospital to handwork and domestic science. The occupational therapy department serves both adults and children with beneficial results.

The work which is being taught embraces all the usual crafts, specially woodwork, gesso, basketry, beadwork, and leather work, including glove making. This report is well illustrated.

Milbank Memorial Fund—This 1928 report of 155 pages may in many respects be taken as a model. The report is well printed on a good stock of paper, in type which is easily read. It has a table of contents and list of tables and graphs at the front, a classified financial table at the back, and excellent photographs, charts and tables for illustrations accompanied by descriptive text written in an unusually interesting style.

Three demonstrations begun in 1923 are still in progress, one in rural Cattaraugus County, one in the urban community of Syracuse, and one in the metropolitan Bellevue-Yorkville district of New York City. The State Committee on Tuberculosis and Public Health of the State Charities Aid Association acts as supervisory agency for the Fund for the demonstrations in Cattaraugus County and in Syracuse. The Community Health Council acts in a similar capacity for the Bellevue-Yorkville demonstration. This council is composed of 56 local health and social agencies, including the department of health of the City of New York.

In Cattaraugus County, the first county health unit and the first county school health service in the state are said to have been established as a result of the demonstration. An attempt was early made to eradicate bovine tuberculosis. Of 5,458 dairy herds in the county, 3,761 are now accredited, and 1,340 others have passed one tuberculin test. The County Board of Supervisors have increased appropriations for health work from 13 cents per capita to 88 cents in a 5-year period. In Syracuse the increase has been from 98 cents to $1.75 per capita. These communities show encouraging trends toward lowered morbidity and mortality rates.

In addition to these demonstrations, the Fund has coöperated with established organizations such as the New York Association for Improving the Condition of the Poor, the Judson Health Center, the State Charities Aid Association, the National Committee for Mental Hygiene, the National Board of Medical Examiners and the American Public Health Association.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

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Smoke—A British symposium on smoke covers its effect upon health, and the available preventive measures. Undoubtedly this collection of papers will prove of value to sanitarians interested in smoke abatement, but the rest of us will find them dry reading.

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BUMPUS, H. C., JR. Medical and Dental Aspects of Focal Infection. New England J. Med., 201, 25: 1230 (Dec. 19), 1929.

Ventilation at the Capitol—In this description of the elaborate equipment installed to remove the superheated air breathed out by the fire-eaters in Senate and House, there will be found much interesting discussion of the problems of mechanical ventilation.

CALVER, G. W. The Ventilation Problem of the Halls of the Senate and House of Representatives. U. S. Nav. M. Bull., 28, 1: 177 (Jan.), 1930.

Streptococcal Toxins—The Dicks report the soluble toxins produced by scarlet fever and by erysipelas hemolytic streptococci immunologically specific and distinct. Reasons for the failure of other studies to reach similar findings are suggested.

DICK, G. F., and DICK, G. H. Specificity of Soluble Toxins Produced by Hemolytic Streptococci. J. A. M. A., 93, 23: 1784 (Dec. 7), 1929.

Health and College Standing—Defective hearing, overweight, flabby muscles, anemia and certain emotional difficulties were found more frequently among a probationary group than among those doing satisfactory work.

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EVANS, C. C. Causes of Absence in the Elementary School of the University of Chicago during Eight Years. J. Prev. Med., 3, 6: 419 (Nov.), 1929.

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the normally healthy child from the ailing one, stimulate the question of what constitutes "normal" health.

FORDYCE, A. D. Borderline Problems in Childhood. Brit. M. J., 3591: 791 (Nov. 2), 1929.

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KELLOG, W. H. The Present Status of Convalescent Serum Therapy. J. A. M. A., 93, 25: 1927 (Dec. 21), 1929.

Rural Influenza Studies—An outbreak of influenza in two isolated communities gave a unique opportunity for an epidemiologic study. The incubation period was usually 2–3 days. Nearly half the families in one town contracted the disease.

KRAMER, S. D. A Study of an Influenza Epidemic in Two Small Isolated Towns. J. Prev. Med., 3, 6: 433 (Nov.), 1929.

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ROYSTER, L. T., and HULVEY, C. N. The Relations of Weight, Height and Age in Negro Children. Am. J. Dis. Child., 38, 6: 1222 (Dec.), 1929.

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TOBEY, J. A. The Legal Phases of Milk Control. Pub. Health Rep., 44, 51: 3110 (Dec. 20), 1929.

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WIDDOWS, G. H. The Derbyshire Open-Air School. Med. Off., 42, 22: 241 (Nov. 30), 1929.

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SALVAGING OLD AGE. By Lillien J. Martin and Clare de Gruchy. New York: Macmillan, 1930. 173 pp. Price, $2.00.

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NEWS FROM THE FIELD

WEST VIRGINIA PUBLIC HEALTH ASSOCIATION

THE following are among the resolutions passed by the West Virginia Public Health Association, at its meeting in Morgantown, W. Va., November 26, 1929.

RESOLVED that an intensive effort be made to secure an increase in the annual appropriation made by the State Legislature for the State Health Department in order that the department may be enabled to extend its activities to a greater extent throughout the state, and be it further

RESOLVED that the necessity for an increase be brought to the attention of the County Courts of the state and also to the State Budget Commission, as outlined in our president's address.

RESOLVED that there be a continued effort made to standardize the methods of administration of public health work and looking toward securing a more permanent tenure of office for health officials.

RESOLVED that the West Virginia Public Health Association secure from the other state associations affiliated with the American Public Health Association an expression of opinion regarding the advisability of requesting the American Public Health Association to provide some channel through which the papers presented at the meetings of the various state associations may be published, so that they may be made available to the members of all affiliated public health associations.

NEW JERSEY PUBLIC HEALTH AND SANITARY ASSOCIATION

THE Fifty-fifth Annual Meeting of the New Jersey Public Health and Sanitary Association was held on December 6 and 7 in Asbury Park, N. J.

The following officers were elected for the ensuing year: D. C. Bowen, Asbury Park, President; Samuel B. English, Glen Gardner, First Vice-President; Samuel L. Salasin, M.D., Atlantic City, Second Vice-President; F. J. Osborne, Health Officer, East Orange, Third Vice-President; Edward Guion, M.D., Atlantic City, Secretary; H. B. Baldwin, East Orange, Treasurer; James E. Brooks, C.E., Glen Ridge, Chairman of the Executive Council; Carl T. Pomeroy, Montclair; Mrs. Lenore Y. Wiley, East Orange; I. W. Knight, Pitman; A. S. Fell, M.D., Trenton, and William B. Palmer, East Orange, were added to the Council. Representative to the American Public Health Association, Edward Guion, M.D., Atlantic City, and B. H. Obert, Asbury Park, alternate.

This society is now regularly incorporated under the laws of New Jersey.

CHILDREN'S BUREAUS, GERMANY

THE first statistical review of the activities of the official children's bureaus of Germany has been recently published.

A national system of children's bureaus was established in Germany by legislation which was enacted in 1922 but which did not come into effect until 1924. The bureaus supervise children placed outside their homes, hold the guardianship of children born out of wedlock, administer public aid to dependent minors, supervise neglected children, and share in probation work and in the enforcement of child labor laws. A recent statistical report of the work of the bureaus shows that on March 31, 1928, there were more than 1,200 children's bureaus in Germany outside Saxony, where this work is carried on by public relief agencies. On that date the bureaus had under supervision more than 544,000 children under 14 years of age in foster homes and were serving as legal guardians of 560,000 children, most of whom were

born out of wedlock. Special supervision was being exercised over 66,000 children who though living with their parents were in danger of becoming neglected or delinquent. The bureaus were also doing probation work with 48,000 juvenile delinquents, in most cases in coöperation with private probation agencies.

S. CHANNING CHILD HOSPITAL OPENED IN VIENNA

THE gratitude of a retired New Jersey business man, who was cured 3 years ago by Dr. Adolf Edelmann, is responsible for the opening of a new important world hospital for cancer and internal diseases in Vienna. It will be known as the S. Channing Child Hospital and Research Institute and will occupy the building of the famous private clinic "Pelikangasse." The new institute is placed under the direction of Dr. Edelmann. There will be many free beds.

The hospital will have the latest radium and biological laboratories and a staff of 30 research physicians. Dr. Edelmann has been a research worker in Vienna for 18 years and, like Mme. Curie, is of Polish birth.

CONGRESS FOR SEX RESEARCH

THE Second International Congress for Sex Research will be held in the House of the British Medical Association, Tavistock Square, London, August 3–9, 1930, under the presidency of Professor F. A. E. Crew, of Edinburgh. Both in membership and in importance it is expected that this meeting will notably excel the First Congress, held in Berlin in October, 1926. Those who are interested are requested to write Professor Crew, The University, West Mains Road, Edinburgh.

The organization and purposes of the Congress can be fully served only by having all of the many aspects of sex research properly represented among the papers read at the London meeting. To American workers it is highly desirable that American investigations and investigators should be adequately represented at London—particularly since few from this country attended the First Congress.

An American committee has been formed for the purpose of securing a maximum participation in the Congress by workers in this country. The members of this committee, representing biology, medicine, psychology, sociology and anthropology, are: Dr. Oscar Riddle, Chairman, Dr. A. A. Brill, Dr. Calvin P. Stone, Dr. William F. Ogburn and Dr. Clark Wissler.

HARVEY W. WILEY RESIGNS

ON January 1, 1930, Dr. Wiley became Director-emeritus of the *Good Housekeeping* Bureau of Foods, Sanitation and Health. Dr. Wiley has been connected with this service since 1912, and resigns because of his great age—83. The Bureau was created for him so he might wage war upon impure foods. He was formerly chief of the U. S. Bureau of Chemistry, which in 1928 was abolished and supplanted by the Bureau of Soils and Chemistry.

TEXAS ASSOCIATION OF SANITARIANS

IN convention assembled at Edinburg, Tex., December 5, 1929, the Texas Association of Sanitarians selected the following new officers for the ensuing year, 1930: President, Dr. H. K. Read, Houston; First Vice President, H. W. Van Hovenberg, Texarkana; Second Vice President, Dr. Y. J. Aiken, Lubbock; Third Vice President, C. N. Shepherdson, College Station; Fourth Vice President, Marguerite Cunningham, Fort Worth; Secretary, E. G. Eggert, Austin. Dr. H. K. Read, the new President, is Supervisor of Hygienics in the public schools of Houston.

It was unanimously decided to hold the 1930 annual short school at Amarillo the first part of September and also hold the business session jointly with the American Public Health Association convention, with which the Texas Association is affiliated, at Fort Worth the last week in October.

Approximately 250 were registered for the meeting and declared this one of the best sessions ever held. Dr. J. R. Mahone is the retiring president.

Some of the resolutions passed were as follows:

WHEREAS, the activities of the State Board of Health and the staff of the State Department of Health have been of great benefit to the state in the prevention of sickness; and

WHEREAS, they have labored diligently during the sessions of this school for the advancement of sanitation in Texas, especially in connection with the standard milk sanitation program, mosquito control, and in water and sewage purification; therefore be it

RESOLVED, that this Association endorse their activities, and further, that steps be taken to bring these accomplishments to the attention of the next Legislature with the request that more adequate appropriations be made for the support of an ample health program for the State of Texas.

WHEREAS, the Republic of Mexico, through its Public Health Service, has been so gracious as to have a representative attend and participate in our sessions in person of Dr. Toribio Gracia; and

WHEREAS, this visit has been instrumental in furthering friendly relations and a closer understanding in health matters; and

WHEREAS, the ground work has been laid through this visit for a joint international health meeting in connection with the American Public Health Association convention in 1930 at Fort Worth, with the possibility of a side trip excursion to Mexico City; therefore be it

RESOLVED, that this Association express its thanks to the government officials of Mexico and especially Dr. Toribio Gracia for his contributions and his visit.

. . . . . .

WHEREAS, the American Public Health Association, in convention assembled in Minneapolis in October, 1929, selected Fort Worth, Texas, for the 1930 annual convention place; and

WHEREAS, this decision was made at the urgent request of the combined efforts of various Texas groups, including the Association of Sanitarians; therefore be it

RESOLVED, that this Association officially go on record here as pledging its full support and coöperation in making the 1930 convention a memorable success.

POPULAR SCIENCE MONTHLY PRIZE

AN annual award of $10,000 and a gold medal for outstanding scientific achievement, to be made first in September, 1930, has been established by *Popular Science Monthly*. A committee composed of 24 scientists will select the first winner from among those who accomplish outstanding work in the year ending June 30, 1930.

This award was created "to heighten the interest of the American people in those conquests of the laboratory and the workshop which benefit the entire community."

NOBEL PRIZE IN MEDICINE

THE Caroline Institute of Stockholm, Sweden, announced that the Nobel Prize in medicine for 1929 has been awarded to Dr. C. Eijkmann of the University of Utrecht, Holland, jointly with Frederick Gowland Hopkins, professor of biochemistry at the University of Cambridge, England. This prize was awarded to them for their excellent work on vitamins.

THE FIRST INTERNATIONAL CONGRESS ON MENTAL HYGIENE

THE First International Congress on Mental Hygiene will be held in Washington, D. C., May 5–10, 1930, with headquarters at the Hotel Willard. President Hoover is Honorary President of the Congress. The American Psychiatric Association and the American Association for the Study of the Feeble-minded will hold their Annual Meetings in conjunction with the Congress.

The *Proceedings* containing papers delivered will be available by applica-

tion to John R. Shillady, Administrative Secretary, 370 Seventh Avenue, New York, N. Y.

Clifford W. Beers of the National Committee for Mental Hygiene is Secretary General of the Congress. Mr. Beers's book *The Mind That Found Itself* is now in its 15th edition.

AUSTRIAN HEALTH DEMONSTRATIONS

THE health demonstrations which have been conducted in Austria during the past five years by the Commonwealth Fund have been concluded. Among the permanent results are more than 80 child-health centers, located in every Province of Austria and enrolling more than 42,000 mothers and children, which will be continued under the supervision of a national administrative committee with government appropriations to take the place of Commonwealth Fund support. A large proportion of the money expended in Austria was used in providing educational opportunities for physicians and health workers occupying strategic positions and in grants to the institutions and activities best able to contribute to further strengthening the public health program.

NEW MEXICO

THE state of New Mexico has been admitted to the U. S. Birth and Death Registration Areas for the year 1929.

PERSONALS

W. C. SIEKER, principal of the Milwaukee Vocational School, Milwaukee, Wis., died on December 2, 1929. Mr. Sieker is a member of the American Public Health Association.

B. L. ARMS, M.D., formerly state health commissioner of Florida, is now county health officer of Idaho Falls, Ida. Dr. Arms is a Fellow of the A. P. H. A.

JAMES C. HARDING, JR., is now associated with Barker & Wheeler, an engineering concern of New York, N. Y.

DR. L. G. BEAN has been appointed as Chief of the new Bureau of Dental Hygiene of the State Department of Health of Ohio.

DR. J. A. FRANK, Chief of the Division of Hygiene, State Department of Health, Ohio, died on December 5.

DR. CLARENCE FLOYD HAVILAND died of pneumonia in Cairo, Egypt. He was the Superintendent of the Manhattan State Hospital for the Insane on Wards Island, New York.

DR. FRED L. ADAIR has accepted the chair of gynecology and obstetrics at the University of Chicago Medical School. Dr. Adair was formerly with the University of Minnesota Medical School.

C. ST. CLAIR DRAKE, M.D., formerly Associate Field Director of the Committee on Administrative Practice of the American Public Health Association, is now Managing Officer of Jacksonville State Hospital, Jacksonville, Ill.

CONFERENCES

Feb. 18, American Conference on Hospital Service, Chicago, Ill.

May 5–10, First International Congress on Mental Hygiene, Washington, D. C.

June 6–14, National Conference of Social Work, Boston, Mass.

FOREIGN

May 19–21, Second International Malaria Congress, Algiers, Algeria

June 4–9, Congress of Royal Institute of Public Health, Portsmouth, England

June 21–28, Royal Sanitary Institute, 41st Congress and Health Exhibition, Margate, England

Aug. 3–9, Second International Congress for Sex Research. London, England

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Shields Warren, Editor $2.

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